



BODE PLUG DOOR
SINGLE AND DOUBLE PANEL
ADJUSTMENT AND MAINTENANCE INFORMATION

BODE CORPORATION
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BODE PLUG DOORS
SINGLE AND DOUBLE PANELS

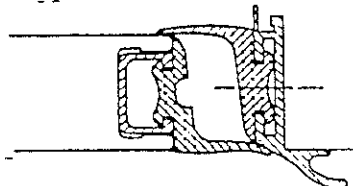
1. GENERAL DESCRIPTION: THE BODE PLUG DOOR SYSTEM MAY UTILIZE ONE OR TWO DOOR PANELS. THESE PANELS ARE DRIVEN BY SPINDLE DRIVE UNITS, ATTACHED TO THE STEP WELL. THE PANELS ARE MADE OF A WELDED ALUMINUM FRAME AND COVERED INSIDE AND OUT WITH AN ALUMINUM SKIN. THE HOLLOW AREA IS FILLED WITH HONEYCOMB PAPER.

2. IN THE CLOSING CYCLE, SPINDLE DRIVES ROTATE THE PANELS IN TOWARD THE BUS. THE SPINDLE DRIVE UNIT IS BEING FORCED UP. WHEN THE DOOR HAS SEATED AGAINST THE PORTAL FRAME, THE PISTON CONTINUES TO PUSH UP WHICH, CAUSES THE PRESET SPRING TO COMPRESS WHICH ALLOW THE DOOR TO RISE AND LOCK THE SIDE CAM LOCKS.

3. IN THE OPENING CYCLE THE PISTON AND DOOR ARE MOVING DOWN, THIS ALLOWS THE CAM LOCKS ON THE PANEL SIDE TO DISENGAGE. THE ROTATING COLUMN THEN GUIDES THE PANELS INTO A PARALLEL PATH ALONG THE OUTSIDE OF THE BUS.

4. DOOR AND PORTAL SEALING SYSTEM: UPPER AND SIDE SEALS CONSIST OF A DOUBLE INNER AND OUTER RUBBER PROFILE.

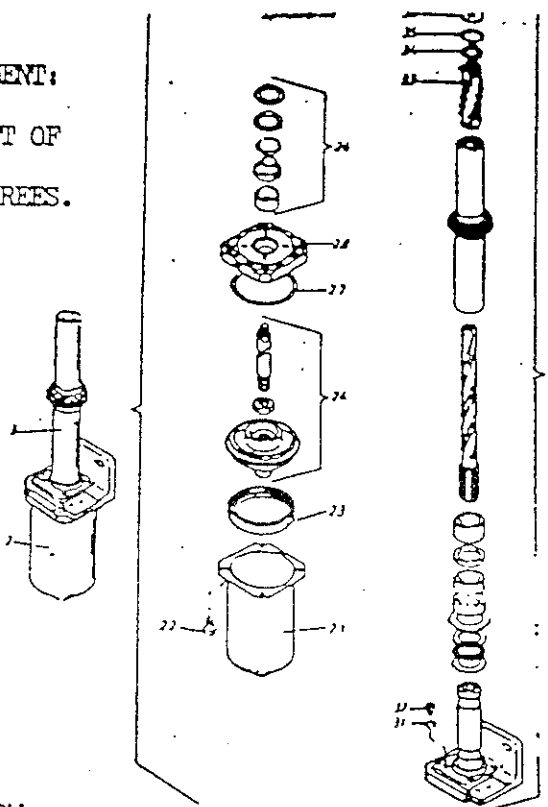
SEE DETAIL #1



DETAIL #1

5. SPINDLE DRIVE UNITS: THE SPINDLE DRIVE UNIT INCORPORATES AN AIR CYLINDER AND A DRIVE UNIT THAT CONVERTS UP AND DOWN MOTION INTO ROTARY MOVEMENT. THIS MOVEMENT IS MUCH THE SAME AS A CHILDS TOP. SEE DETAIL #2

6. SPINDLE DRIVE RESERVE ADJUSTMENT:
THE TOTAL ROTATIONAL MOVEMENT OF THE SPINDLE DRIVE IS 155 DEGREES. TO ROTATE THE DOOR FULL OPEN TO FULL CLOSE REQUIRES 126 DEGREES OF MOVEMENT. THIS LEAVES 29 DEGREES OF ROTATION. TO LIFT THE DOOR INTO THE LOCKS 18 DEGREES OF MOVEMENT IS ALSO REQUIRED.



TO ACHIEVE THIS SETTING FOLLOW

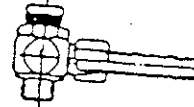
THE STEPS BELOW:

SPINDLE DRIVE DETAIL #2

1. PRESSURIZE THE CYLINDER
2. RELEASE THE CLAMPS ON BOTH SUPPORT ARMS (THE ROTATING COLUMN SHOULD ROTATE AS FAR AS IT CAN)
3. DEPRESSURIZE THE CYLINDER IN THE OPEN POSITION
4. ROTATE THE COLUMN TOWARD THE CLOSING $5/16$ OF AN INCH (MAKE SURE THAT THE COLUMN TURNS INSIDE THE SUPPORT ARM CLAMPS)
5. RETIGHTEN THE UPPER AND LOWER SUPPORT ARMS
6. A REFERENCE MARK CAN BE MADE OF THE COLUMN AND THE SPINDLE DRIVE BRACKET TO HELP METER THE AMOUNT.

7. SPINDLE DRIVE SPEED ADJUSTMENT: DOOR SPEED IS CONTROLLED BY ADJUSTABLE SWIVEL FITTINGS . SEE DETAIL #3

TO ADJUST THESE SWIVEL FITTINGS FOLLOW THE PROCEDURE BELOW:



ADJUSTABLE SWIVEL FITTING

DETAIL #3

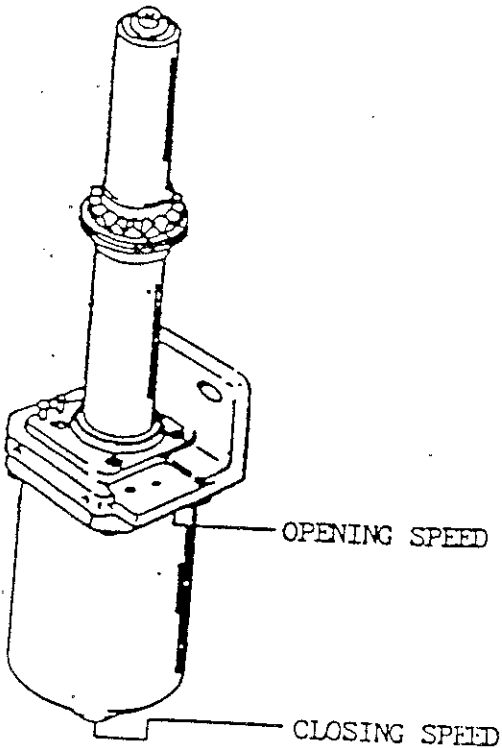
- a. DEPRESSURIZE THE SYSTEM
- b. TURN THE ADJUSTABLE SWIVEL FITTINGS ALL THE WAY CLOCKWISE
- c. THEN TURN THE VALVE COUNTER-CLOCKWISE OUT 2 TURNS.
- d. ADJUST AS NEEDED IN 1/4 TURN INCREMENTS .
- e. FOR ADJUSTABLE SWIVEL FITTING LOCATION SEE DETAIL # 4

8. CUSHION ADJUSTMENT:

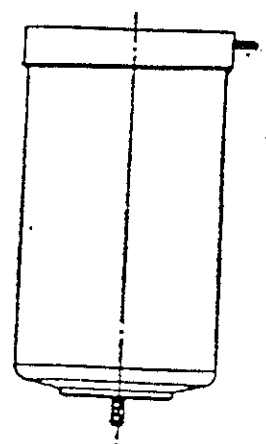
- a. CUSHION ADJUSTMENT SCREWS ARE PROVIDED AS AN OPTION FOR LARGE BORE SPINDLE DRIVE UNITS (100 MM CYLINDER).
- b. TURN THE CUSHION SCREWS ALL THE WAY CLOCKWISE (CLOSED)
- c. TURN EACH CUSHION VALVE OUT OR COUNTERCLOCKWISE 1 1/2 TURNS.

NOTE: IF NEEDLE VALVES ARE REMOVED MOISTEN BEFORE REPLACED.

- d. FOR LOCATION SEE DETAIL# 5



DETAIL #4



DETAIL# 5

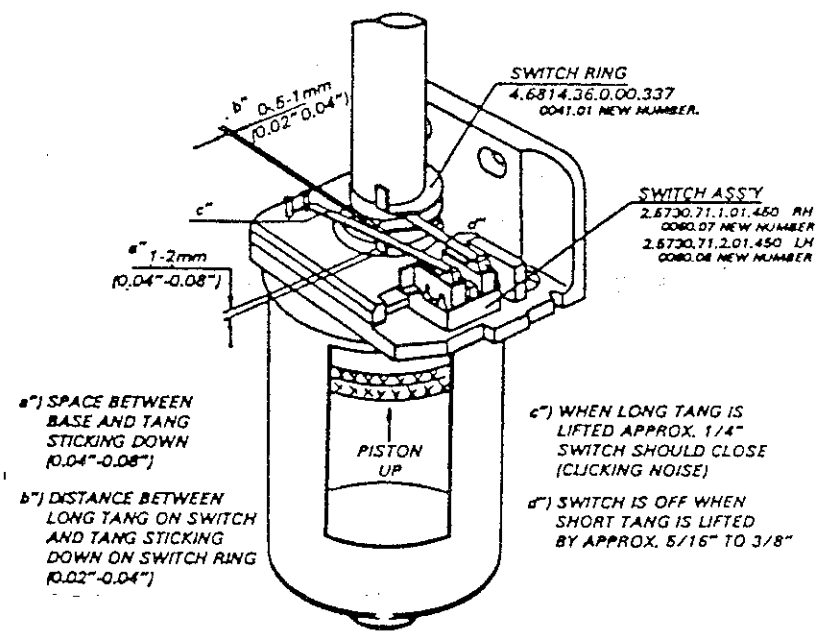
CLOSING CUSHION
OPENING CUSHION

9. SPINDLE DRIVE LIMIT SWITCHES:

THE LIMIT SWITCH ASSEMBLY
CONSISTS OF TWO SWITCHES
ONE HAS A SHORT TANG AND ONE
HAS A LONG TANG TRIGGER.
THE SHORT TANG IS USED AS AN
OPTION SWITCH(i.e. STEP WELL
LIGHTS, INTERLOCK, AND WARNING
LIGHTS)

THE LONG TANG SWITCH IS USED AS A REVERSING SYSTEM. IF THE DOOR PANEL
BECOMES OBSTRUCTED THE PISTON CAUSES THE DOOR TO RISE. THE LONG TANG
SWITCH IS LIFTED BY A SWITCH RING , ATTACHED TO THE ROTATING COLUMN,
AND THE DOOR IS REOPENED TO ALLOW THE OBSTRUCTION TO BE MOVED.

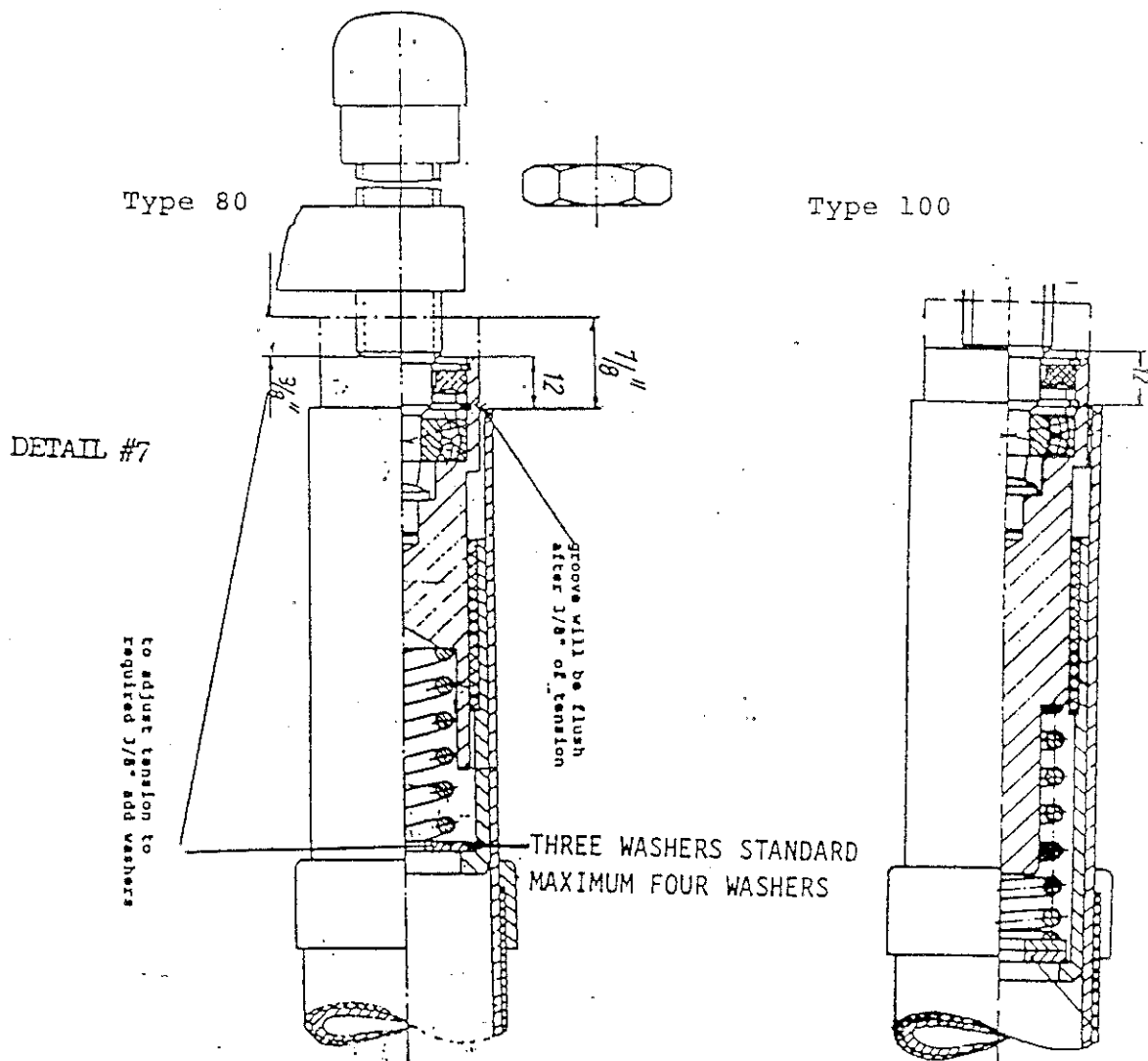
10. LIMIT SWITCH ADJUSTMENT: SEE DETAIL # 6 OR SERVICE BULLETIN 004
SWITCH RING ADJUSTMENT



DOOR CLOSED WITHOUT AIR PRESSURE

DETAIL #6

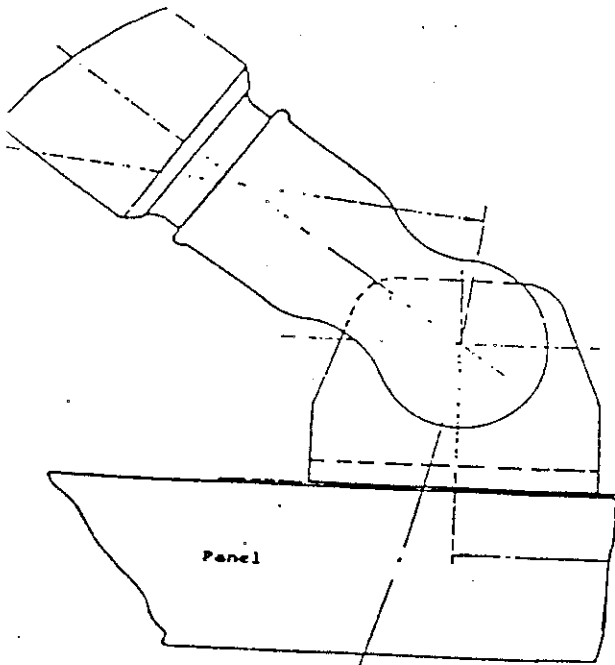
11. ROTATING COLUMN ASSEMBLY: THIS UNIT CONTAINS THREE COMPONENTS.
- A. UPPER BEARING ASSEMBLY: THIS ASSEMBLY CONSISTS OF THE UPPER PIVOT BEARING, TENSION SPRING, AND THREE SHIM WASHERS. THE SPRING IS USED TO DETERMINE THE AMOUNT OF PRESSURE THE PISTON MUST PRODUCE BEFORE THE DOOR PANELS BEGIN TO LIFT INTO THE CAM LOCKS. IF A DOOR SYSTEM LIFTS BEFORE THE PANELS ARE FULLY SEATED AGAINST THE PORTAL TRIM THE CAUSE IS NOT ENOUGH PRESET ON THE SPRING. FOR PROPER ADJUSTMENT SETTING SEE DETAIL # 7.
- NOTE: ON CURRENT DESIGNS, A STEEL SPACER WILL REPLACE THE (3) WASHERS REQUIRED FOR SPRING TENSION.



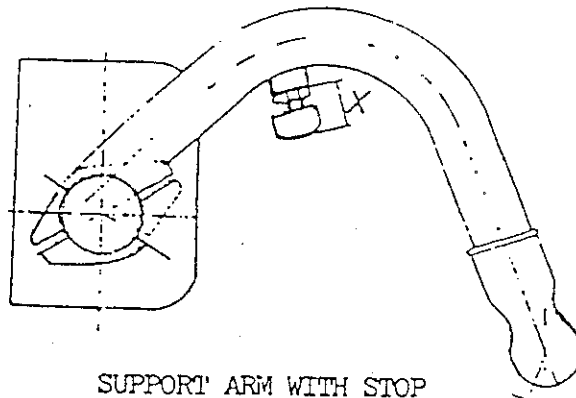
B. ROTATING COLUMN TUBE: ACTS AS A DRIVE SHAFT FOR THE SUPPORT ARMS.

C. COUPLING JOINT: THIS UNIT ATTACHES THE ROTATING COLUMN TO THE SPINDLE DRIVE.. NOTE: AREAS THAT ARE ENCLOSED BY THIS COUPLING SHOULD BE COATED WITH LIGHT GREASE INCLUDING THE THREADS. LOCK THE COUPLING NUT WITH THE PROVIDED ALLEN SCREW.

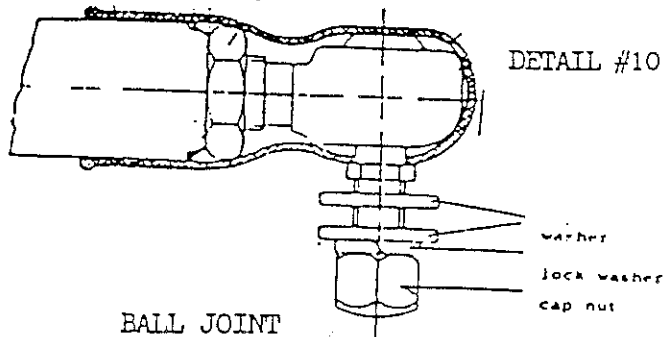
12. SUPPORT ARMS: THE SUPPORT ARMS ARE USED AS THE PIVOT POINTS FOR THE DOOR PANELS. THESE PIVOT POINTS ARE PROVIDED BY BALL JOINTS ATTACHED IN TWO PLACES OF THE PANEL. THESE ATTACHMENT POINTS ARE MADE BY SLOTTED BRACKETS. SEE DETAILS # 8,9,10



DETAIL # 9
SLOTTED BRACKET



SUPPORT ARM WITH STOP
DETAIL #8



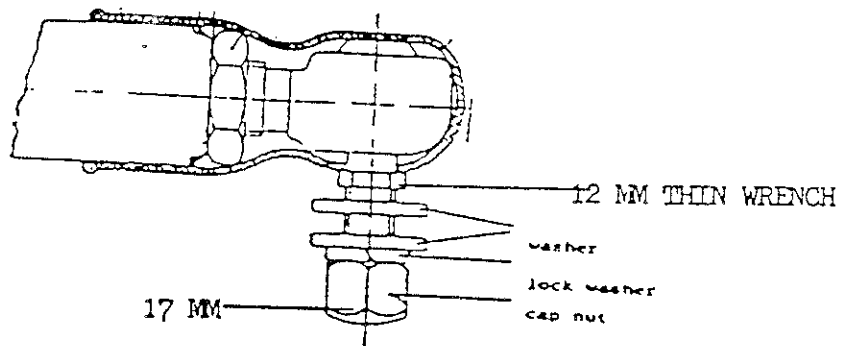
BALL JOINT

DETAIL #10

washer
lock washer
cap nut

13. BALL JOINTS:

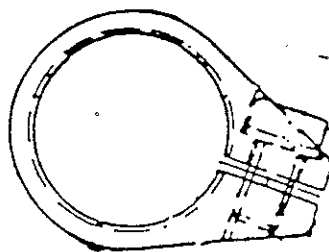
THE BALL JOINTS ARE SCREWED INTO THE END OF THE SUPPORT ARM. THREAD SIZE OF THE BALL JOINT SHANK IS M16x2. ALWAYS USE A FLAT WASHER ON TOP AND BOTTOM OF THE SLOTTED BRACKET. SEE DETAIL # 11. THE BALL JOINT IS A SEALED UNIT AND IS NOT SERVICABLE. THE WHOLE UNIT IS COVERED WITH A GREY RUBBER BOOT. TO TIGHTEN THE BOLT IN THE SLOTTED BRACKET A THIN 12mm OPEN END WRENCH IS REQUIRED. THIS TOOL CAN BE MADE BY GRINDING DOWN AN OPEN END WRENCH OR TAPPET WRENCHES ARE AVAILABLE FROM YOUR LOCAL SUPPLIER. SEE DETAIL #11.



DETAIL #11

14. SUPPORT ARM CLAMP:

THIS UNIT FASTENS THE SUPPORT ARMS TO THE ROTATING COLUMN. THE UPPER SUPPORT ARM USES A CLAMP THAT HAS BOLTS ON ONLY ONE SIDE OF THE CLAMP. SEE DETAIL #12.

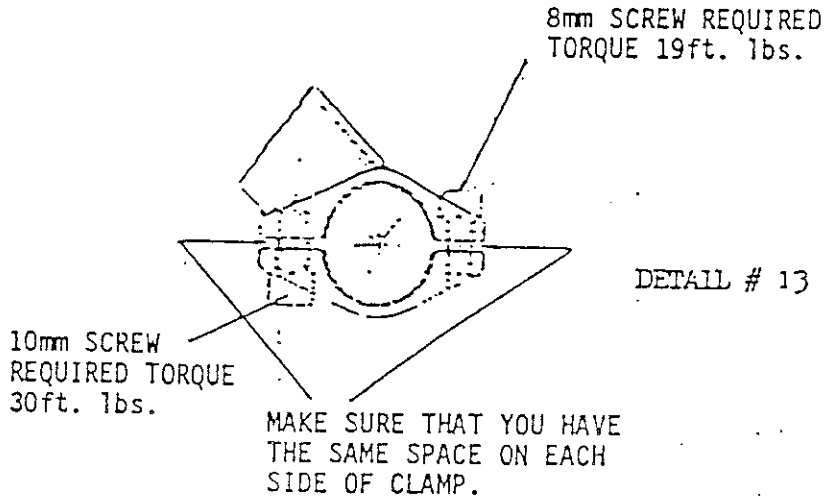


DETAIL #12

UPPER SUPPORT
ARM CLAMP

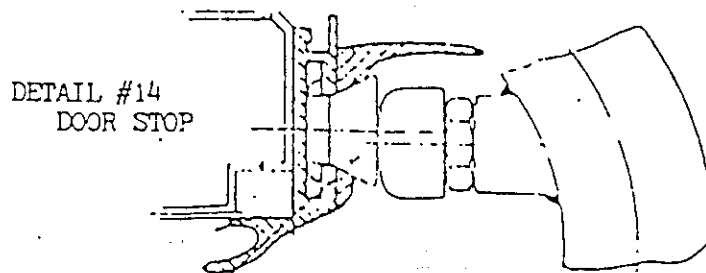
14. SUPPORT ARM CLAMP:

THE LOWER SUPPORT ARM CLAMP USES A TWO PIECE CLAMP ASSEMBLY .
FOR PROPER HOLDING ABILITY SPACE MUST BE MAINTAINED BETWEEN
EACH HALF OF THE CLAMP. SEE DETAIL #13. PROPER TORQUE
MUST ALSO BE MAINTAINED ON THE BOLTS IN THE CLAMP.



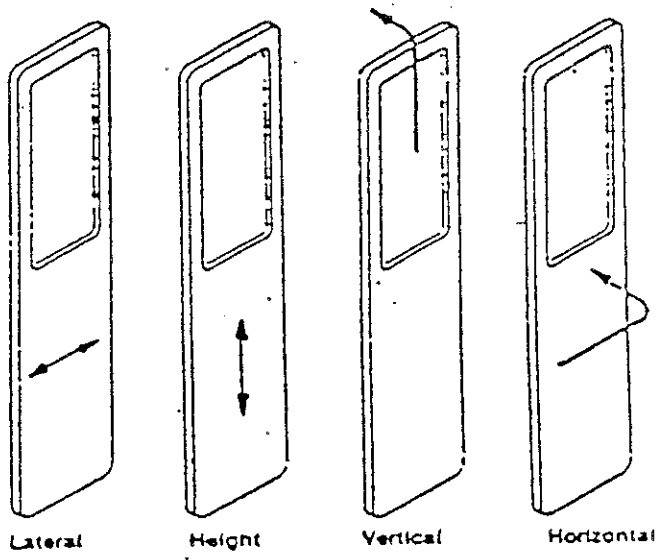
THIS CLAMPING UNIT ON THE LOWER SUPPORT ARM IS DESIGNED AS
A SLIP JOINT THIS WILL PROTECT SPINDLE DRIVE UNIT FROM
DAMAGE; HOWEVER IF DESIRED THIS ARM CAN BE SPOT WELDED
FOR FURTHER INFORMATION ON WELDING PROCEDURE SEE SERVICE
BULLETIN # 003.

15. DOOR STOP: AN ADJUSTABLE DOOR STOP IS INCORPORATED INTO THE
SUPPORT ARM. ADJUSTMENT AS TO THE LENGTH MAY BE MADE BY
SCREWING THE BOLT IN OR OUT AND LOCKING IT IN PLACE WITH
THE LOCK NUT. SEE DETAIL # 14



16. DOOR PANEL ADJUSTMENTS:

ADJUSTMENT	HOW TO ADJUST	HOW TO CHECK
Lateral	Slide door panel on slotted bracket at the ball joint door arm.	Clearance between door and portal should be 10mm.
Height	Move door arms up or down on rotating column. *Refer to Service Bulletin - 010 Next Page	Door seal should be even on top, sides and bottom of door.
Vertical	Turn one door arm at a time on the rotating column.	When door closes, it should seal at the top and bottom at the same time.
Horizontal	Lengthen or shorten tie rod.	Door should be flush with sidewall

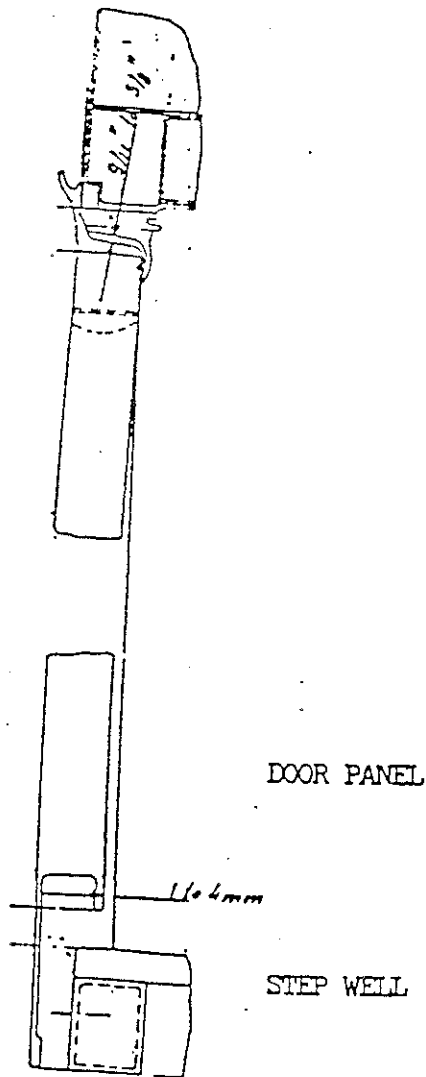


Door Planes

16. VERTICLE ADJUSTMENT:

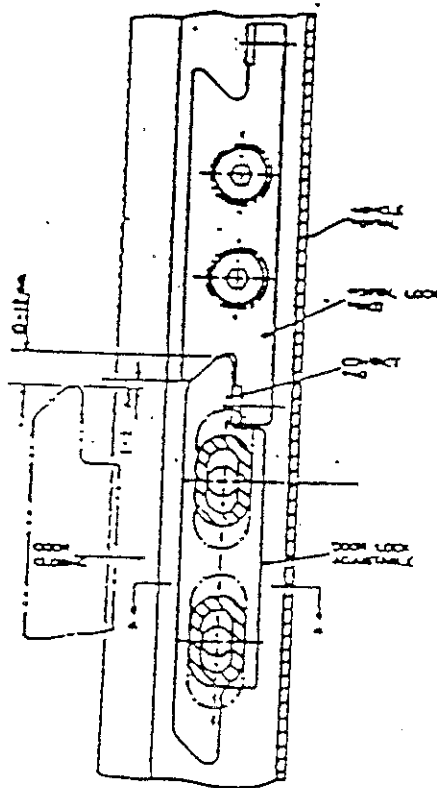
WHEN MAKING THE VERTICLE OR PITCH ADJUSTMENT: TIGHTENING THE UPPER SUPPORT ARM WILL CAUSE THE DOOR PANEL TO ROTATE OUT AT THE BOTTOM. AS IN DETAIL # 17 SHOWS THE BOTTOM OF THE DOOR PANEL MUST BE ALIGNED OUT SLIGHTLY AT THE STEP WELL. WHEN THE UPPER ARM CLAMP BOLT IS TIGHTENED THE PANEL WILL BE SEATED ALONG THE PORTAL TRIM.

DETAIL # 17



17. CAM LOCKS:

EACH DOOR SET USES FOUR SETS OF CAM LOCKS TO SECURE THE DOORS DURING OPERATION OF THE BUS. WHEN PROPERLY ADJUSTED THE CAMS SHOULD ONLY CLEAR THE UPPER HALF, THAT IS ATTACHED TO THE PORTAL, BY 1 OR 2 MM. SEE DETAIL # 15.

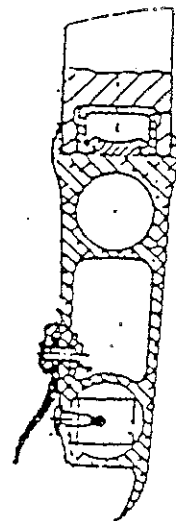


DETAIL # 15

18. RUBBER BOTTOM DOOR BUFFER:

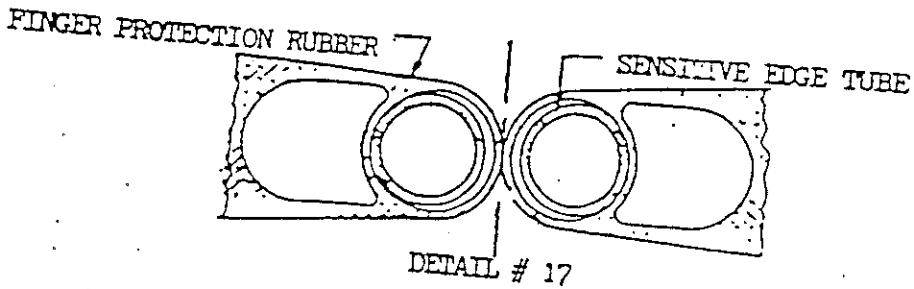
THIS OPTIONAL FEATURE PROVIDES PROTECTION AGAINST CURB DAMAGE. IT IS EASILY REPLACED AND GIVES SUPERIOR SEALING AT THE BOTTOM STEP. SEE DETAIL # 16.

RUBBER BOTTOM
DOOR BUFFER
DETAIL #16



19. SENSITIVE EDGE SYSTEM:

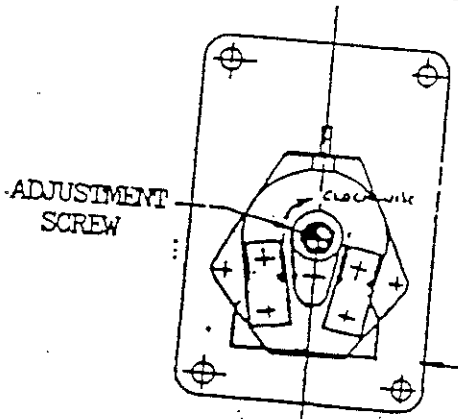
THE SENSITIVE EDGE CAUSES THE DOOR TO REOPEN WHEN OBSTRUCTED BY A PASSENGER. THIS SAFETY SYSTEM IS CONTAINED WITHIN THE HOLLOW AREA OF THE FINGER PROTECTION RUBBER. SEE DETAIL # 17. THIS HOLLOW TUBE MUST NOT HAVE ANY AIR LEAKS.



ACTIVATION IS CAUSED BY AN IMPACT TO THE HOLLOW TUBE, WHICH CAUSES A PRESSURE WAVE THAT ACTIVATES THE PRESSURE SENSITIVE SWITCH. EACH DOOR PANEL HAS A SWITCH RECESSED INTO THE TOP INSIDE CORNER. THE HOLLOW TUBE AND PRESSURE SENSITIVE SWITCH ARE CONNECTED BY A SMALL PLASTIC TRANSFER TUBE. SEE DETAIL # 18.

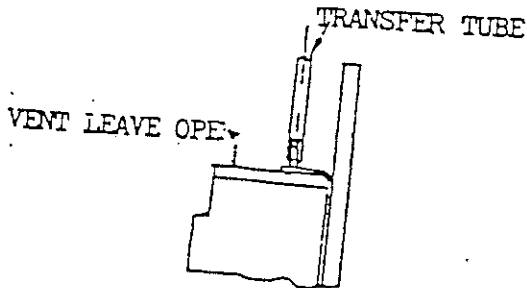
DETAIL # 18

SENSITIVE EDGE SWITCH



CLOCKWISE- MORE SENSITIVE

COUNTERCLOCKWISE-LESS SENSITIVE



WARNING: NEVER TURN THE

ADJUSTMENT SCREW MORE THAN

ONE FULL TURN IN EITHER DIRECTION

20. TROUBLESHOOTING SENSITIVE EDGE PROBLEMS:

ON DELIVERY OF A NEW COACH THE TRANSFER TUBE SHOULD BE REMOVED FROM THE SENSITIVE EDGE SWITCH FOR A FEW SECONDS TO ALLOW THE PRESSURE INSIDE THE HOLLOW TUBE TO EQUILIZE WITH THE OUTSIDE PRESSURE. DIFFERENCE IN ALTITUDE OF MANUFACTURE AND OPERATION WILL CAUSE THIS OVER-SENSITIVE CONDITION.

THE SENSITIVE EDGE SYSTEM IS MADE UP OF TWO BASIC SYSTEMS. THE ELECTRICAL SYSTEM THAT CAN BE CHECKED BY BLOWING IN THE PRESSURE SENSITIVE EDGE SWITCH. IF THE DOOR OPEN THE ELECTRICAL SYSTEM IS WORKING. ADJUSTMENTS TO THE SWITCH MAY HAVE TO BE MADE.

THE OTHER PART OF THE SYSTEM IS THE STATIC AIR SYSTEM. THE HOLLOW TUBE, AND THE TRANSFER TUBE, MAKE UP THE SYSTEM. IF THIS SYSTEM IS FOUND AT FAULT, REMOVAL OF THE HOLLOW TUBE WILL BE NECESSARY TO CHECK FOR LEAKAGE. ALSO A CHECK ON THE TRANSFER TUBE TO SEE IF IT IS PINCHED MAY SOLVE THE PROBLEM.

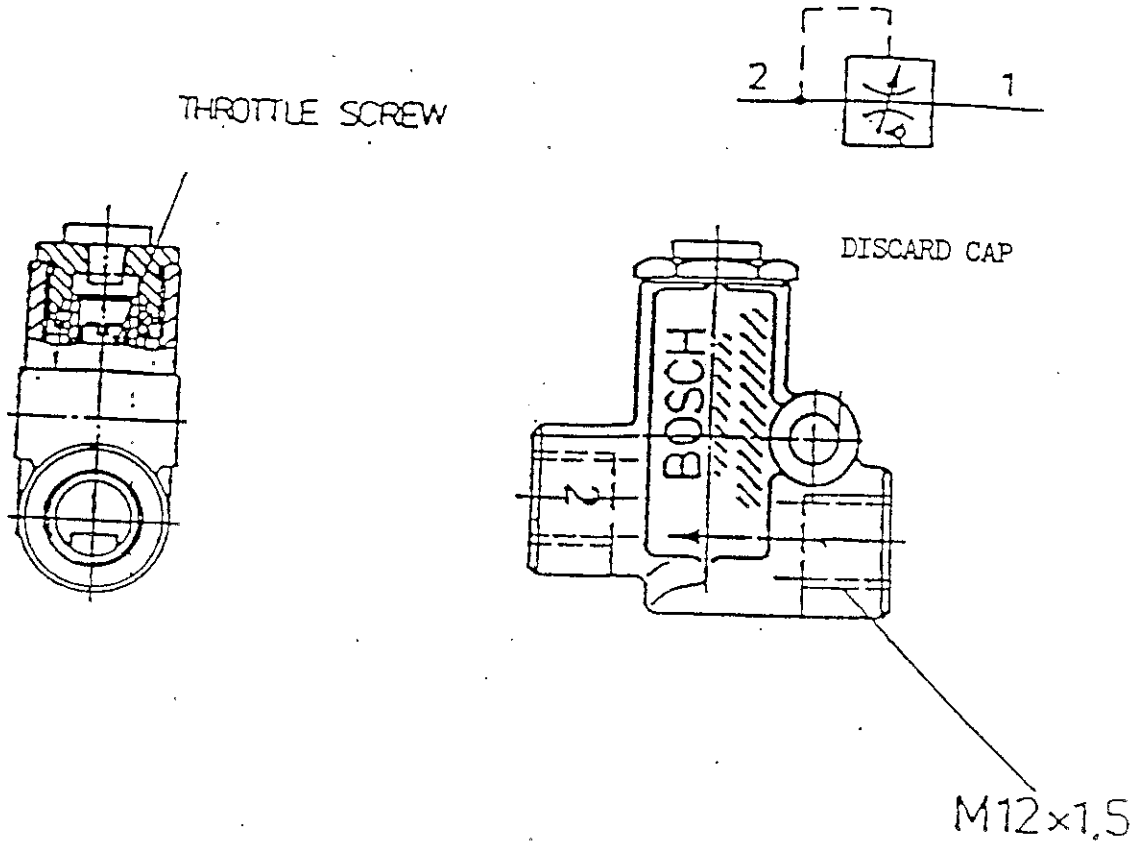
COMPONENT LIST

-13-

THROTTLE VALVE	page
FRONT DOOR SOLENOID	1
EMERGENCY VALVE(DUMP VALVE)	2
REAR DOOR SOLENOID(BLUE VALVE)	3
5-POSITION SWITCH	4
INLINE AIR FILTER (SERVICE BULLETIN 005-n)	6
TOUCH BAR (OPTIONAL)	7
	8

Throttle Valve

The purpose of this valve is to limit the inrush of air into the system when the emergency valve is turned on.



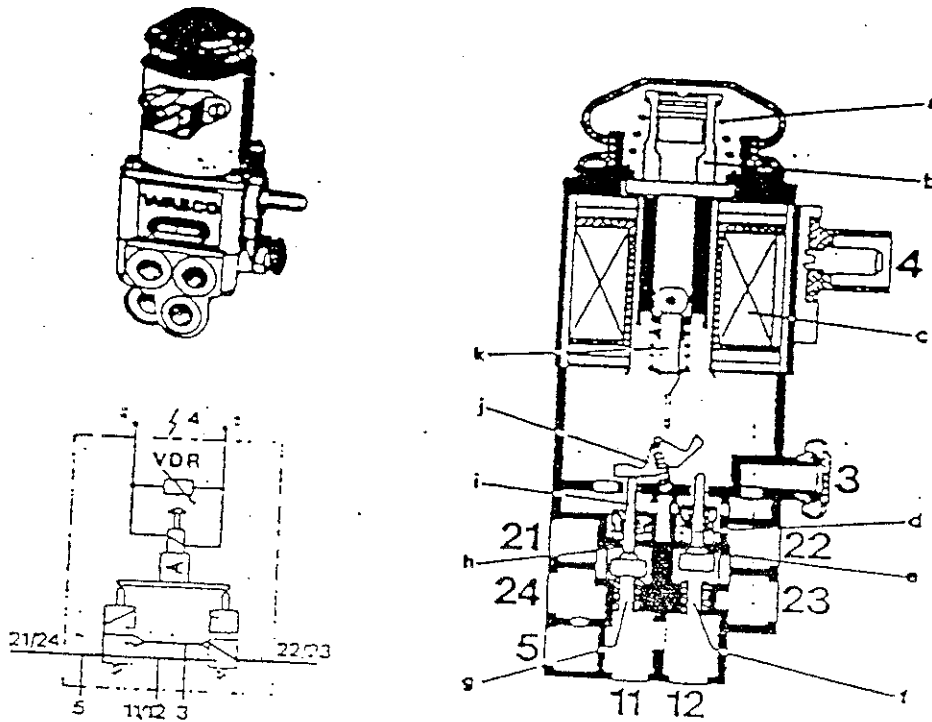
THROTTLE VALVE- IS A DIFFERENTIAL PRESSURE REGULATOR. IT'S PURPOSE IS TO PREVENT DOOR SLAMMING WHEN THE AIR SYSTEM IS RECHARGED. ADJUSTMENT IS PRESET AT THE FACTORY. ADJUSTMENT IS POSSIBLE BY REMOVING THE PLASTIC PLUG AND TURNING THE ADJUSTMENT SCREW. CLOCKWISE ROTATION INCREASES THE TIME NEEDED FOR REPRESSURIZATION. COUNTERCLOCKWISE ROTATION WILL SPEED UP REPRESSURIZATION. PLEASE DISCARD THE PLASTIC CAP AS IT CAN TRAP MOISTURE AND CAUSE THE VALVE TO FREEZE IN ONE POSITION.

COMPONENT -2

Solenoid Door Valve

472 017

USED FOR FRONT DOOR APPLICATION FOR SEPTA



Purpose:

To alternately pressurize and exhaust bus door cylinders.

Operation:

Compressed air flows from the supply reservoir through ports (11) or (12) into the solenoid valve. Compressed air flows then through open inlet (f), ports (22) and (23), and on to the door cylinder. The door should be closed in this valve position.

When current is supplied to solenoid (c), armature (b) moves downward and pushes plunger (k) onto rocker (j). Rocker (j) tilts onto valve (d), which causes inlet (f) to close. The release of valve (i) opens inlet (g). Supply air flows now through ports (21) and (24) to the door cylinders. Simultaneously, compressed air in ports (22) and (23) is exhausted through opened outlet (e) and exhaust port (3) into the atmosphere. Thus the force acting upon the door cylinder piston has reversed, opening the closed doors. Interruption of the current supply to solenoid (c) causes spring (a) to push armature (b) upward again to its neutral position.

To close the door, current is supplied again to solenoid (c). Thus, armature (b) moves downwards and plunger (k) pushes rocker (j) into its original position. Valve (i) closes inlet (g) and compressed air passes through ports (21) and (24) through opened outlet (h) and exhaust (3) into the atmosphere. Valve (d) opens inlet (f) and the supplied air flows through inlet (f) and through ports (22) and (23) to the door cylinders. Thus the force acting upon the door cylinder piston has been reversed again, closing the open door.

If the current supply is interrupted, the solenoid valve can also be hand operated by pressing down on armature (b).

Reparatursatz · Jeu de réparation Repair kit · Corredo di riparazione

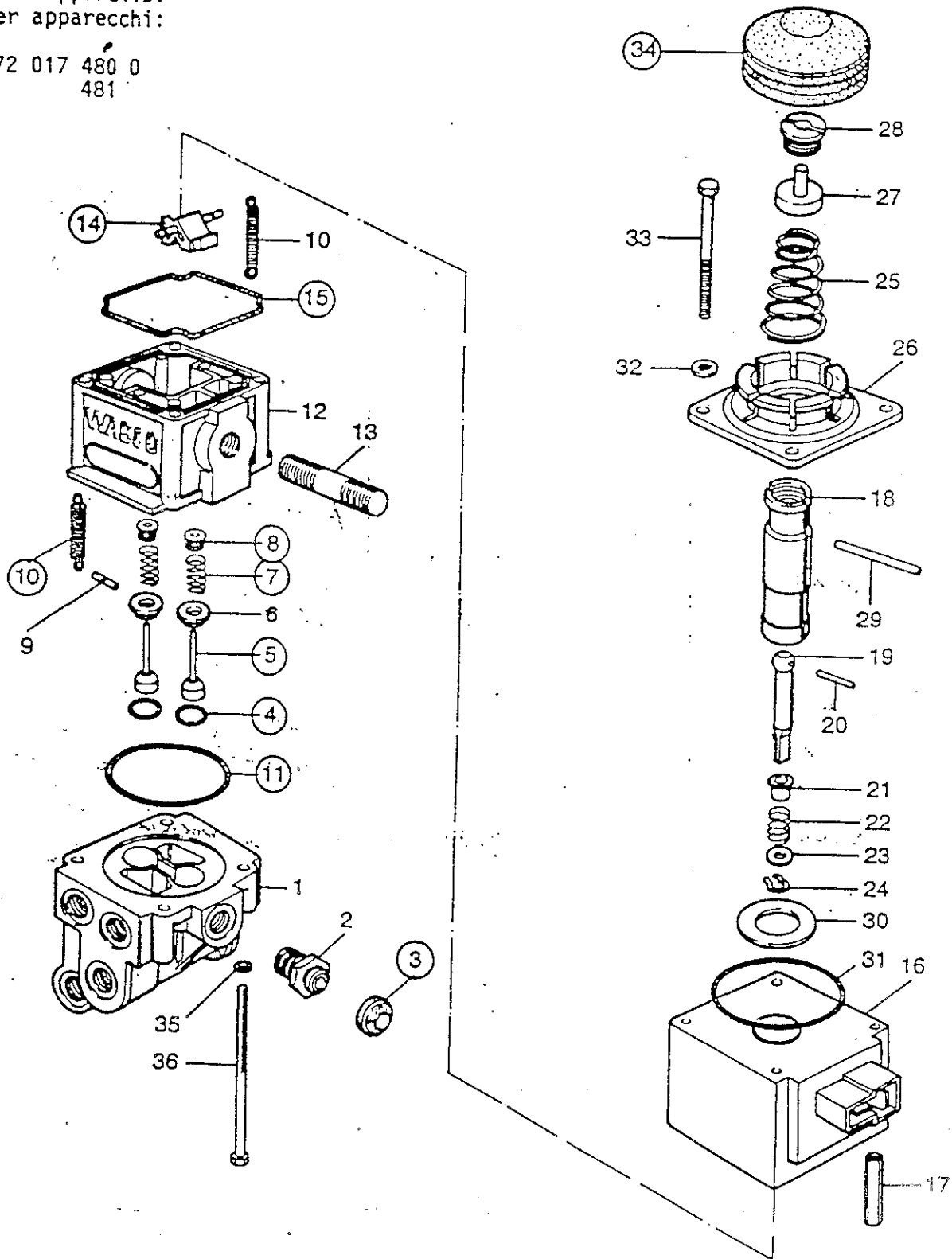
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für Geräte:
for devices:
pour appareils:
per apparecchi:

472 017 480 0
481

○ = Les pièces sont dans la pochette
○ = Particolare contenuto nel corredo

○ = Diese Teile sind im Reparatursatz enthalten
○ = These parts are included in the repair kit

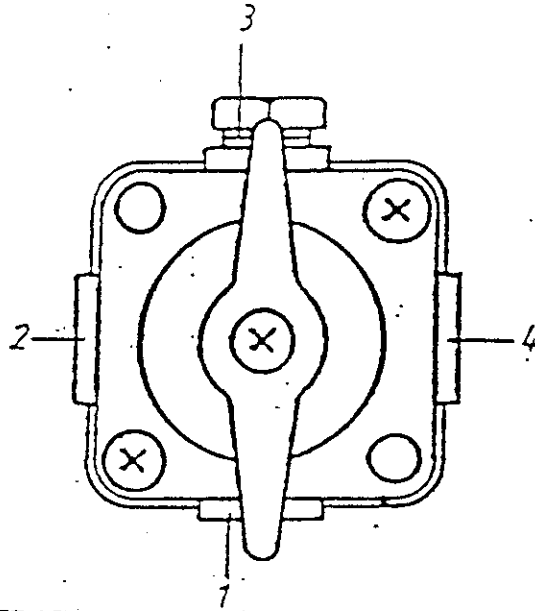


COMPONENT-3

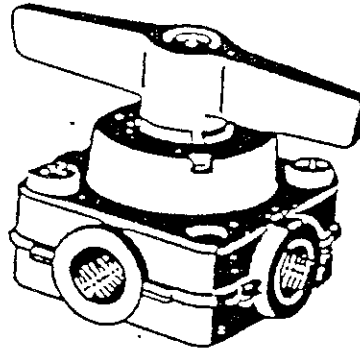
EMERGENCY VALVE

- 1 AIR IN
- 2 AIR OUT
- 3 PLUGGED *
- 4 EXHAUST

* optional; pressure sensitive switch for special application



WHEN DEPRESSURIZED ALL AIR SHOULD EXIT WITHIN 15 SECONDS.



Purpose:

To pressurize and vent compressed air lines, primarily for door control systems.

Operation:

When handle (a) is in its normal position, supply air flows via open port (1) through the 4/2 way valve and proceeds via open ports (2) into the work lines.

By turning handle (a) 90° (1/4 turn) to its emergency position, supply air flow is blocked and the work lines are vented via port (4).

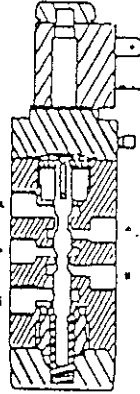
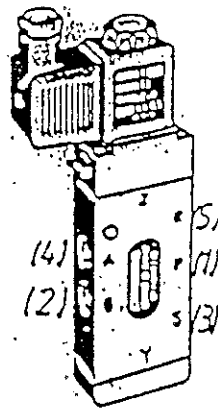
Maintenance:

No special maintenance is required.

COMPONENT OPERATION

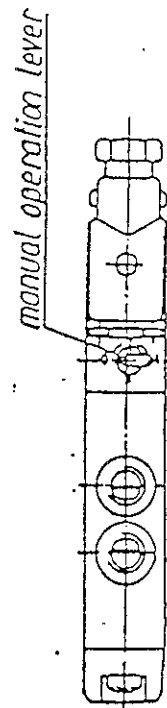
The door system operation is controlled by the following valves and safety systems:

Control Valve - A three way solenoid activated valve that directs the air flow to either the open (extension) or closed (retraction) side of the cylinder. This valve is controlled electrically by a maintained signal from the drivers control switch.



TECHNICAL DATA

Nominal diameter	4mm	0.16"
Working pressure	max.	10 bar = 145 lb/in ²
	min.	3 bar = 43.5 lb/in ²
Flow Qn at 6bar Δp=1bar :	350 l/min	124 fpm
Ambiente temperature	-15 to +50°C / 5 to 122°F	
Medium	Air	
Insulation class	F	
Voltage tolerance	±10%	
Continuous duty	100%	
Weight	0.55kg	1.24lb



PORT P(1) = Air in
PORTS A(4) and B(2) = Air out
PORTS R(6) and S(3) = Exhaust

TIME DELAY CONTROL UNIT - The Time Delay Control Unit is attached directly to the control valve solenoid and supplies the electrical signal required to operate the control valve. This signal can be initiated by either the sensitive edge system or the drivers control switch.

The control unit has the following wire connections.

RED- 12 or 24 volts DC positive

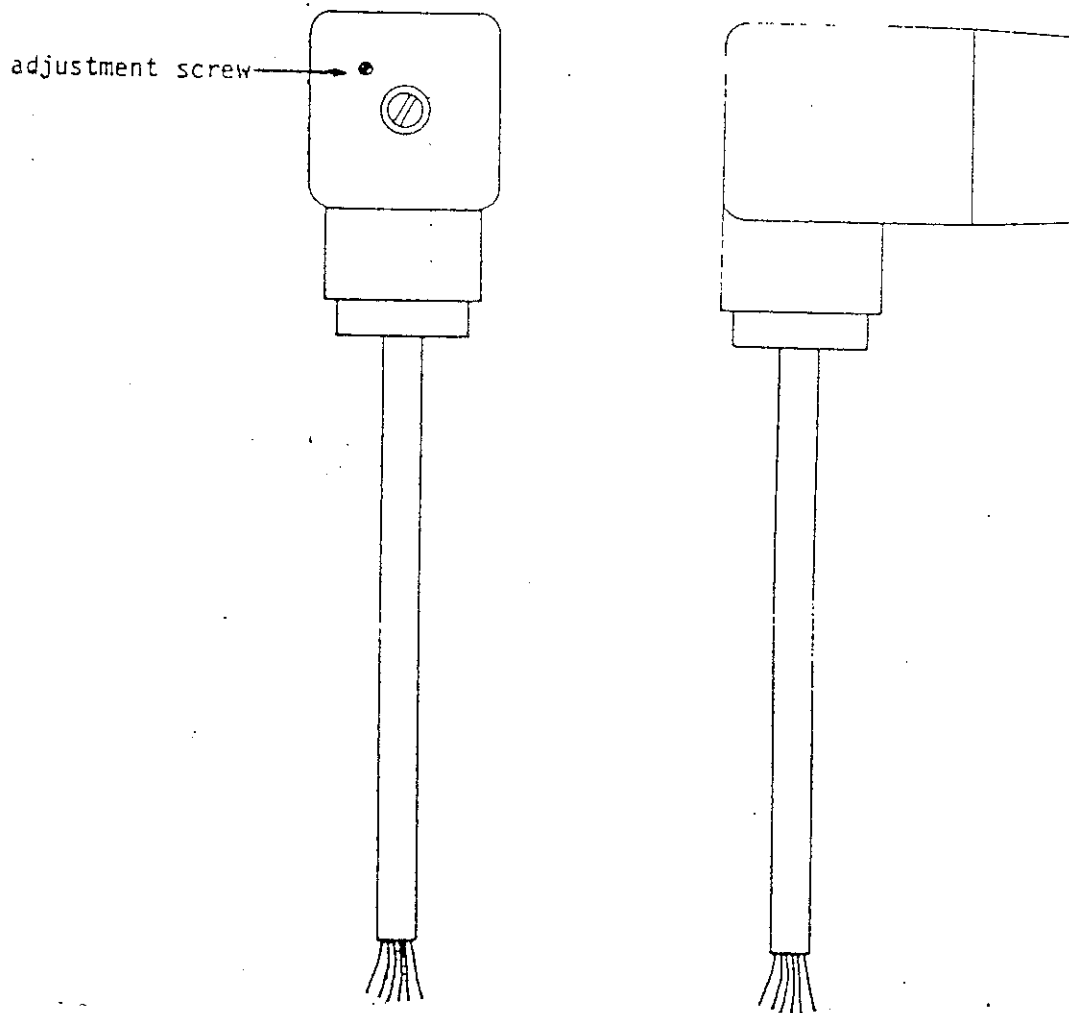
BLACK- 12 or 24 volts DC negative ground

WHITE- Ground

BLUE- Drivers control or override switch to ground

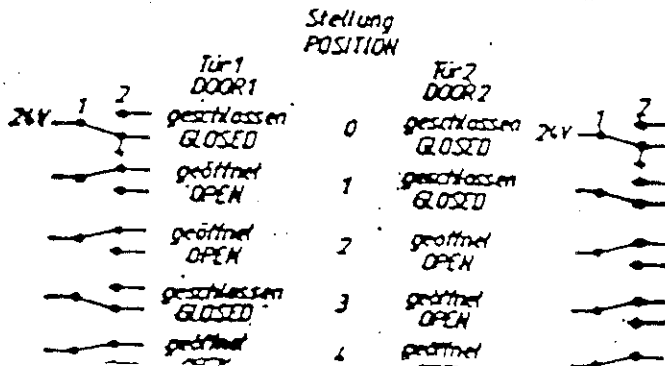
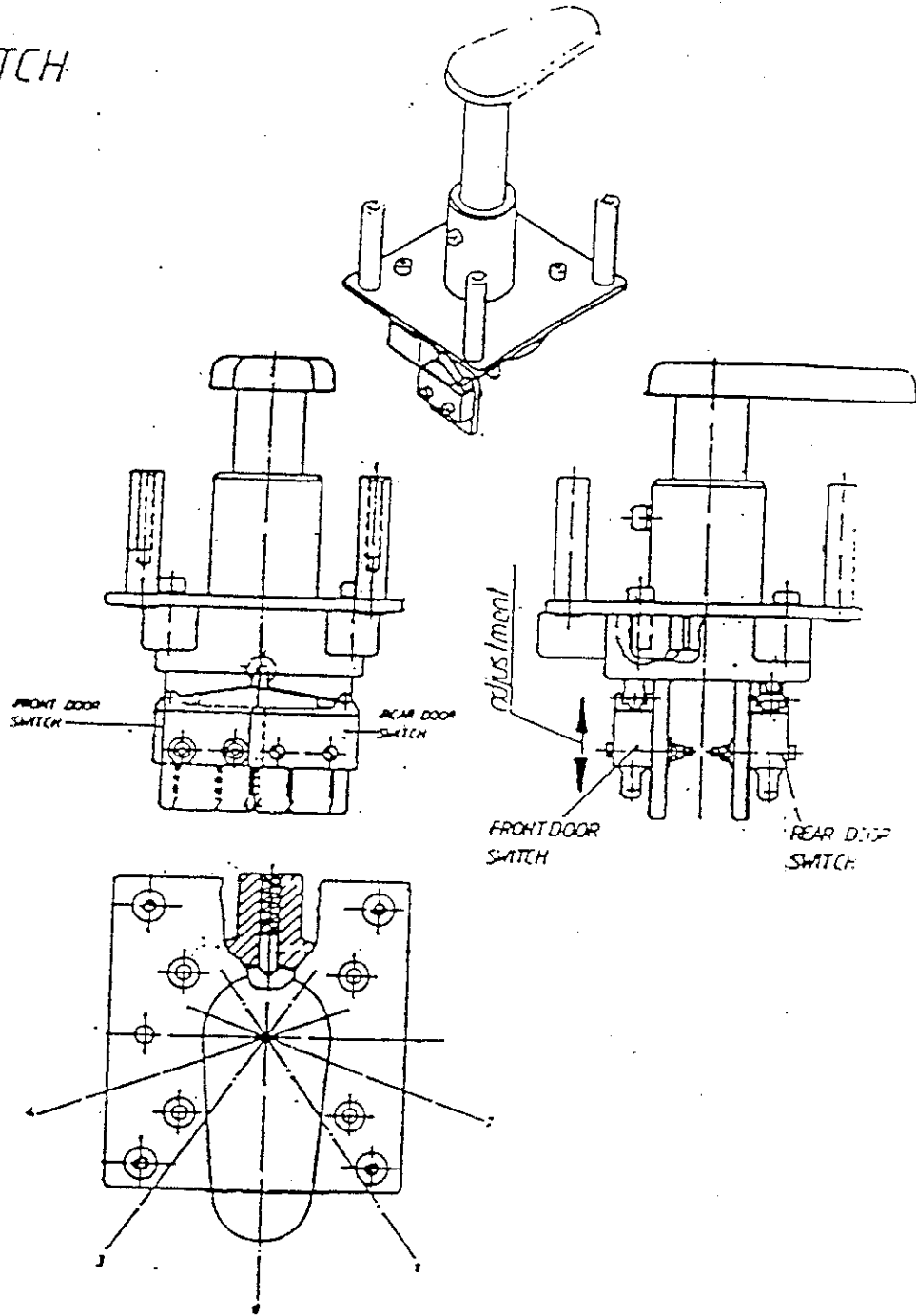
GREEN + TAN- In series with isolated sensitive edge circuit.

The Time Delay is adjustable from 1/2 to 25 seconds. Increase the Time Delay by turning the adjustment clockwise. Decrease by turning counter-clockwise. To adjust from minimum to maximum takes approximately 15 turns.



COMPONENT-6

5 POSITION SWITCH





SERVICE BULLETIN-005-n
1-1-1987

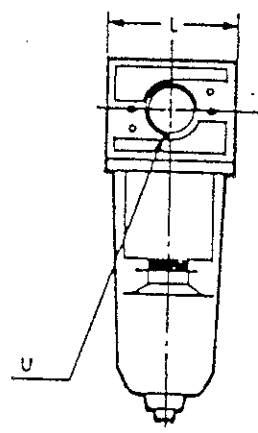
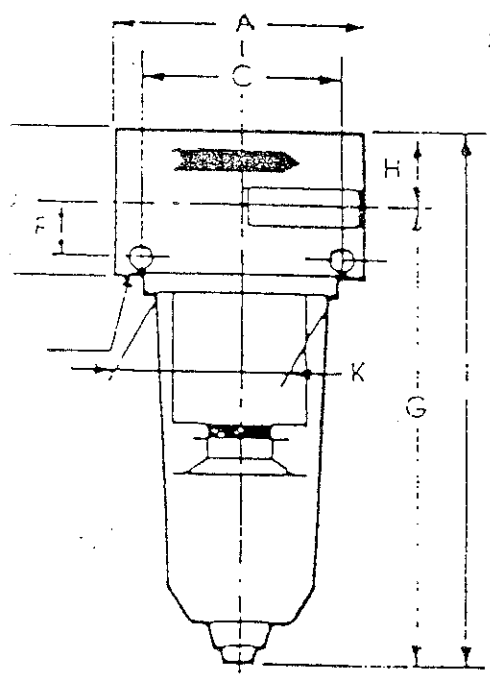
SUBJECT: RECOMMENDATION FOR INSTALLING AN INLINE AIR FILTER INTO THE MAIN AIR INPUT LINE.

AS OF 1-10-1987 BODE WILL FURNISH THIS FILTER AS STANDARD EQUIPMENT ON ALL COMPLETE DOOR SYSTEMS SHIPPED.

BODE CORPORATION
P. O. Box 4399
Jackson Mill Road
Spartanburg, S.C. 29305
Tel.: (803)578-9683
Telex: 805173
Telecopier: (803)578-8802

INSTALLATION MUST BE MADE IN THE MAIN AIR INPUT LINE WITH THE PROVIDED FITTINGS.

PLEASE NOTE THE DIRECTION OF THE AIR FLOW INDICATED BY AN ARROW ON THE TOP OF FILTER HOUSING.



Bowl	Modu d
RU	1/4"
A	1.05
C	1.26
D	1.73
F	.39
G	4.96
H	.79
I	5.74
J	.15
K	1.57
L	1.05
M	.95
P	1/16"
Wt. (lbs.)	.64

FILTER # 0048.02

THE FILTER UNIT PROVIDES A 50 MICRON ELEMENT, AUTOMATIC PULSE DRAIN(WHICH REQUIRES A DRAIN TUBE), AND A WATER SEPARATOR. UTILIZATION WILL ALLOW CLEAN, DRY AIR THAT WILL INCREASE SOLENOID VALVE LIFE.

SAFETY SYSTEMS PROTECT EVERYONE: MAKE SURE THEY ARE WORKING:



SERVICE BULLETIN-005a

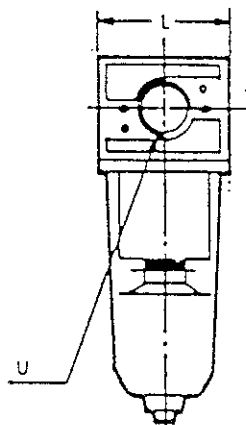
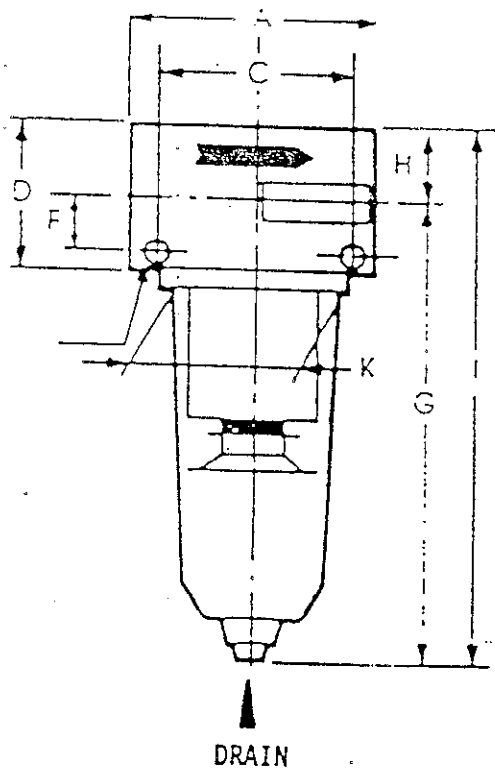
12-17-91

Subject: INLINE AIR FILTER

BODE CORPORATION
 P. O. Box 4389
 Jackson Mill Road
 Spartanburg, S.C. 29305
 Tel.: (803)578-8683
 Telex: 805173
 Telecopier: (803)578-8802

Care should be taken when tightening the Plastic Bowl on the Air Filter. The Plastic Bowl only need be hand tight to seal. Plastic Bowl should not be used as a leverage tool when airline fittings are screwed into the filter housing.

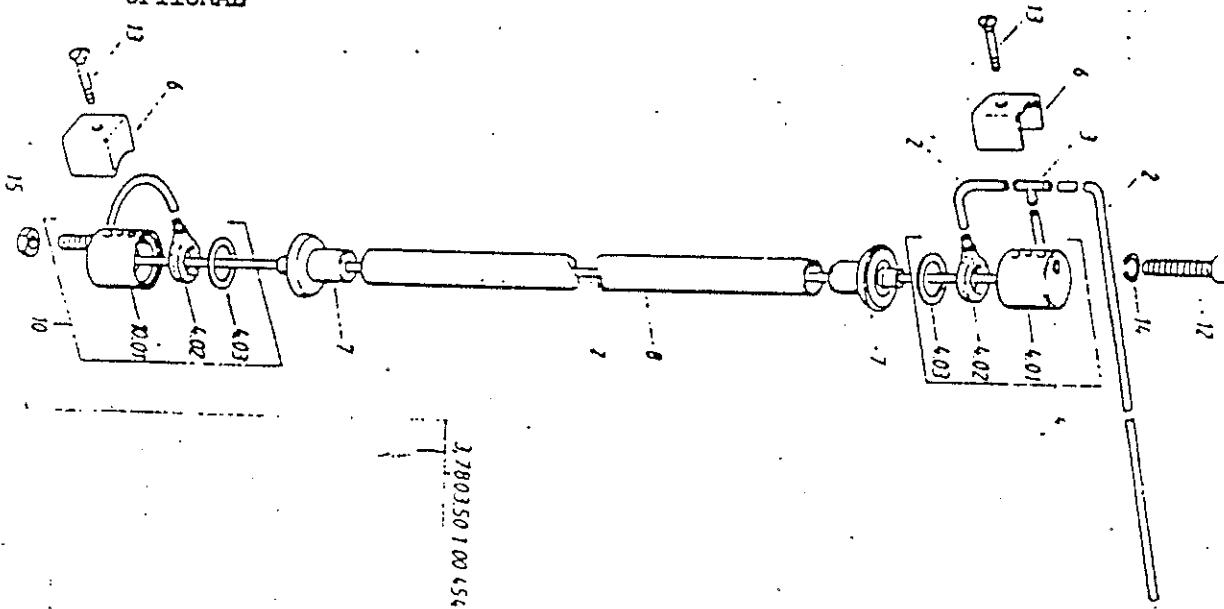
Also care should be taken when tightening the drain line fitting on the bottom of the Plastic Bowl. Drain line is needed to discharge the moisture that builds up in the filters Plastic Bowl.



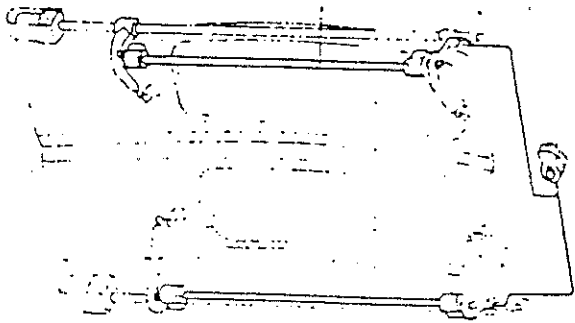
Bowl	Modu 6
U	1/4"
A	1.61
	1.25
	1.73
	.39
	4.96
	.75
	5.74
	1.6
	1.57
	1.65
	.95
	1/8"
WT Lbs.	64

SAFETY SYSTEMS PROTECT EVERYONE: MAKE SURE THEY ARE WORKING:

COMPONENT-8
OPTIONAL



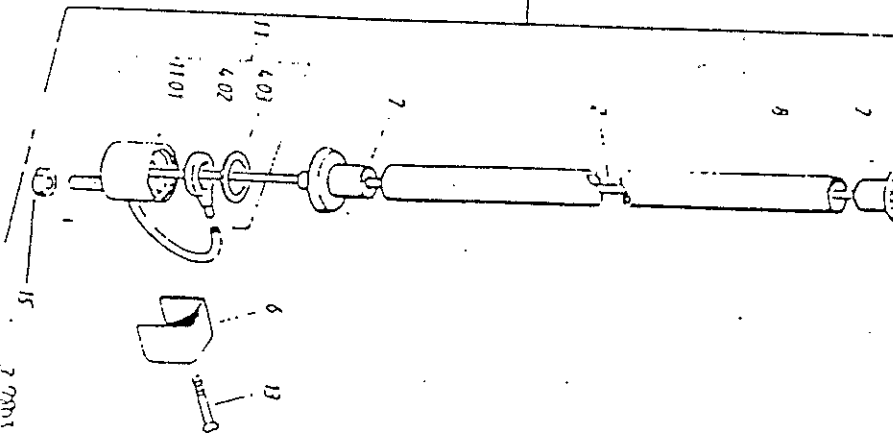
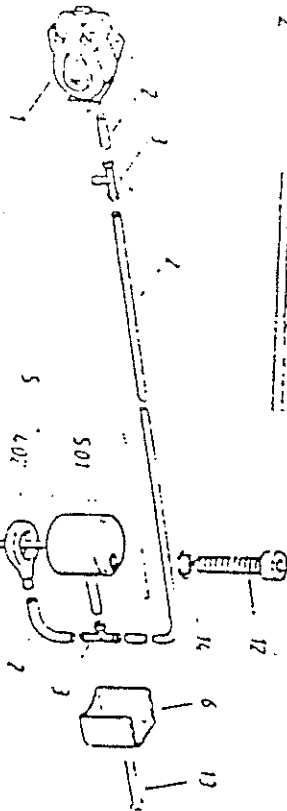
3 7803 50 1 00 454



3 7803 50 2 00 454

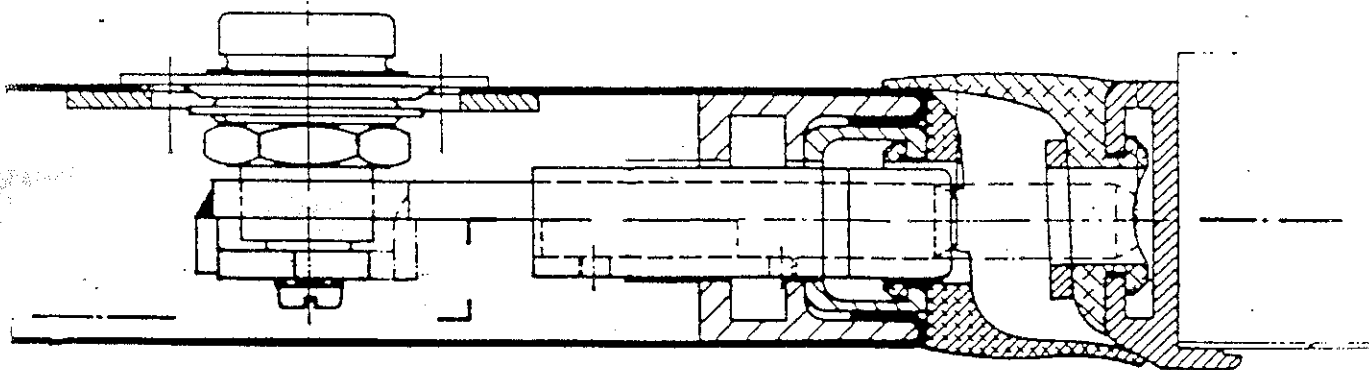
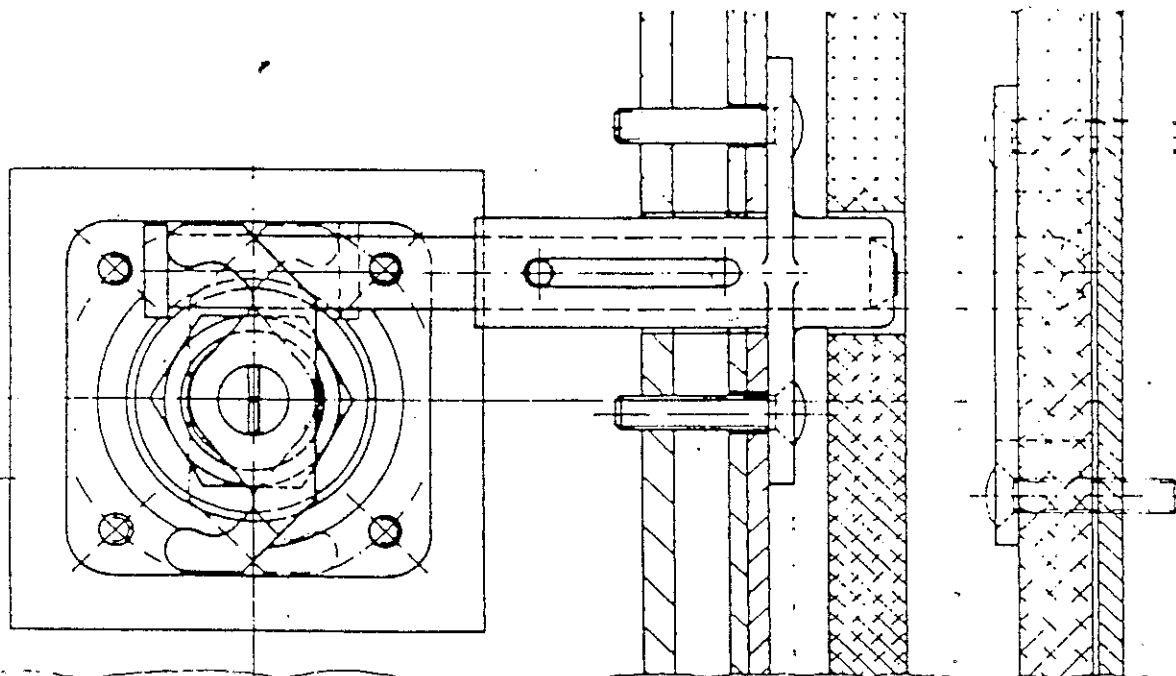
3 7803 50 1/2 00 454

Touch Bar

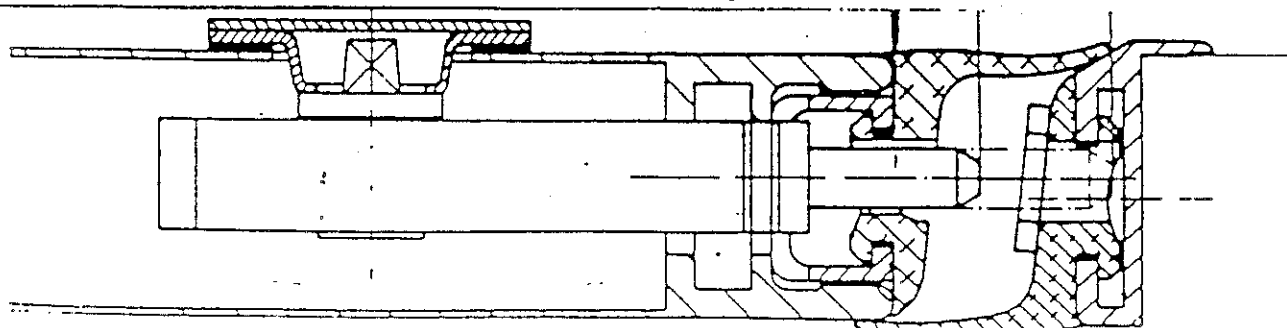


3 7803 50 1/2 00 454

OPTIONAL DEAD BOLT LOCK

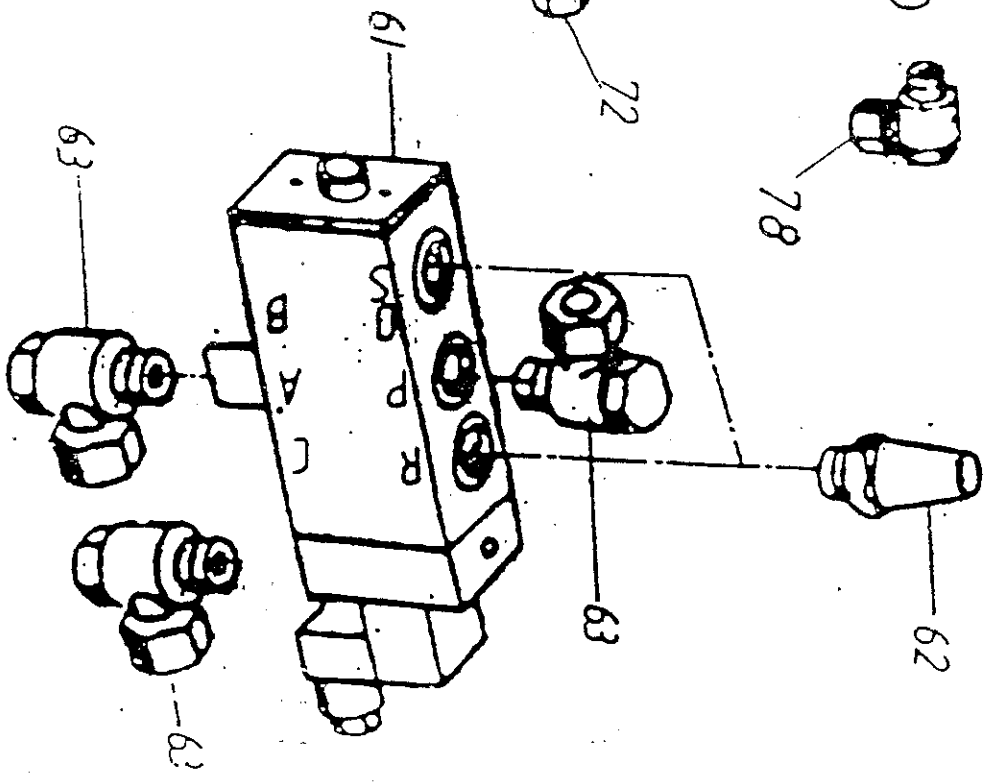
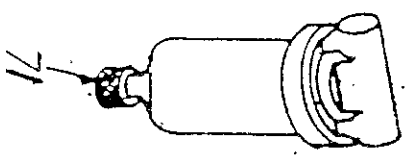
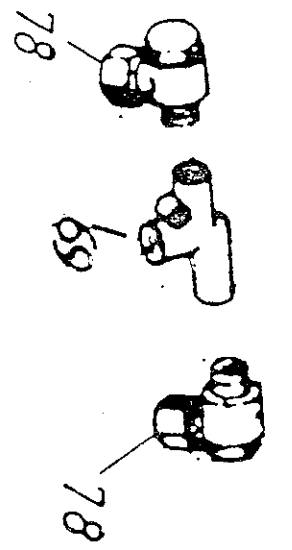
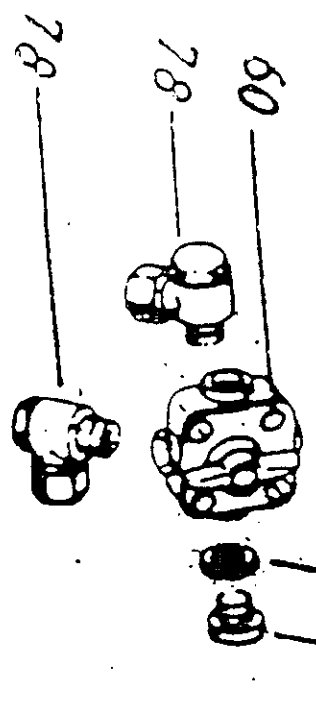
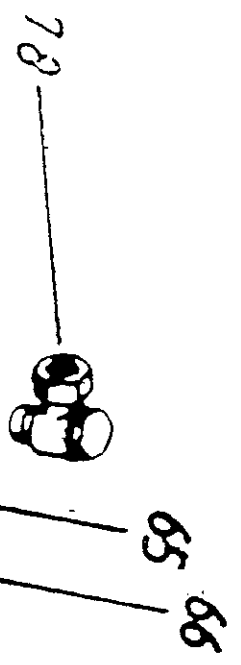
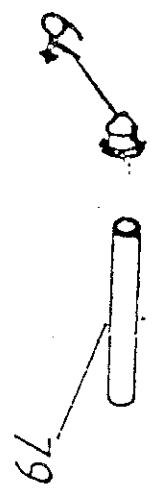



KEYED





PLUG DOOR
 PNEUMATIC COMPONENTS
 2509100
 PAGE 303

Bode
 BODE CORPORATION
 P.O. BOX 4399
 MOBILE ALA 36688
 SPARTANBURG, SC 29586
 (803) 378-7400
 TEL. (803) 378-7400
 TELETYPE (803) 378-6600

QUALITY DOORS ARE OUR BUSINESS

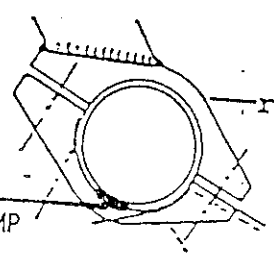


SERVICE BULLETIN
003-n

BODE CORPORATION
P. O. Box 4399
Jackson Hill Road
Spartanburg, S.C. 29305
Tel.: (803)578-8683
Telex: 805173
Telecopier: (803)578-8602

Welding Instructions

- 1) Only weld the bolted on side (See sketch).
- 2) Only weld on the top of the clamp.
- 3) Start the weld about 1/8" away from edge.
- 4) Length of weld between 3/8 and 1/2".



removable (not welded).

TAC WELD
THIS HALF OF CLAMP
ONLY!!

DETAIL # 2 WELDING INSTRUCTIONS

THIS SERVICE BULLETIN COVERS RECOMMENDED PROCEDURE FROM BODE CORPORATION TO RESOLVE MOVEMENT OF LOWER SUPPORT ARMS. THIS IN TURN WILL INCREASE RELIABILITY AND LESSEN NEED FOR ADJUSTMENT.

SAFETY SYSTEMS PROTECT EVERYONE: MAKE SURE THEY ARE WORKING:



SERVICE BULLETIN-003-n

PROCEDURE FOR WELDING LOWER SUPPORT ARM FOR ALL SINGLE AND DOUBLE PANEL PLUG DOORS

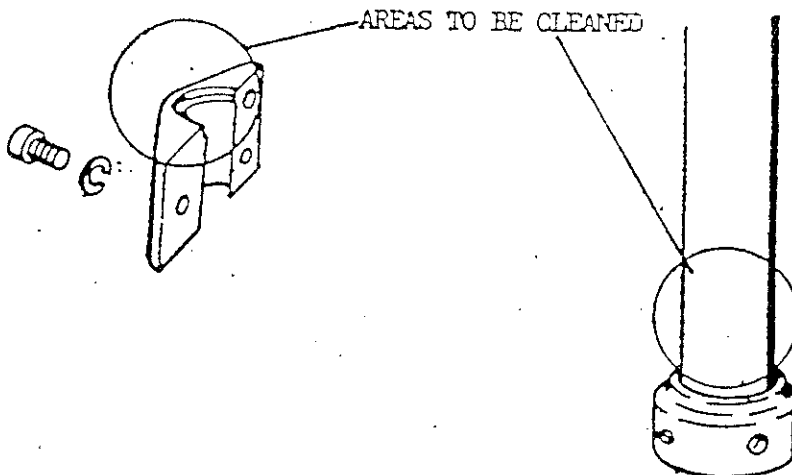
BODE CORPORATION
P. O. Box 4399
Jackson Mill Road
Spartanburg, S.C. 29305
Tel: (803)578-9683
Telex: 805173
Telecopier: (803)578-8802

I. DISCONNECT BATTERY CABLES FROM BATTERIES

NOTE: DAMAGE COULD OCCUR TO SOLID STATE COMPONENTS
IF WELDING IS DONE WHILE BATTERIES ARE CONNECTED.

II. ADJUST DOOR PANELS AS NEEDED TO INSURE PROPER FIT.
REFER TO BODE ADJUSTMENT MANUAL OR VIDEO INSTRUCTIONS.

III. REMOVE PAINT AND FOREIGN MATERIAL FROM AREAS TO BE WELDED.
A GOOD METAL TO METAL SURFACE IS REQUIRED TO ACHIEVE PROPER
BONDING. SEE DETAIL #1.



DETAIL #1

IV. WELDING SHOULD BE DONE ONLY ON THE CLAMP SIDE. THIS WILL
ALLOW REMOVAL OF THE SUPPORT ARM BY REMOVING THE BOLTS.
SEE DETAIL #2.

SAFETY SYSTEMS PROTECT EVERYONE: MAKE SURE THEY ARE WORKING:



SERVICE BULLETIN-004n

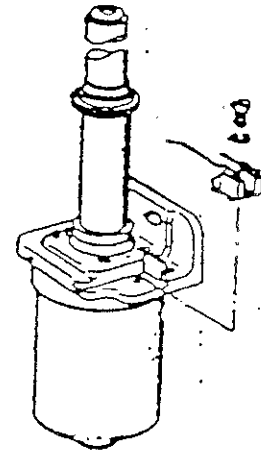
4-25-1986

INSTALLATION OF NEW DESIGN STAINLESS STEEL SWITCH RING AND SPINDLE DRIVE LIMIT SWITCHES

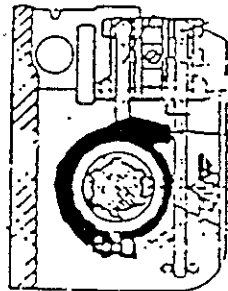
FOR DOUBLE PANEL PLUG DOOR SYSTEMS

- I. REMOVE EXISTING ROUND TOPPED COVERS FROM SPINDLE DRIVE.
- II. LABEL ALL WIRES AS TO LOCATION, UNPLUG WIRES FROM SWITCHES.
- III. REMOVE THE SWITCH MOUNTING SCREW FROM BETWEEN THE LIMIT SWITCHES. SEE DETAIL #1.
- IV. REMOVE EXISTING BRASS SWITCH RING. SEE DETAIL #2.
NOTE: THIS CAN BE ACCOMPLISHED BY USING TWO PAIR OF PLIERS AND BENDING THE RING OPEN ENOUGH TO ENABLE THE RING TO SLIDE AROUND THE ROTATING COLUMN AND BE REMOVED.
- V. CLEAN OFF THE EXPOSED SURFACE ON TOP OF THE SPINDLE DRIVE.
- VI. REPLACE THE TERMINAL ENDS ON THE WIRES WITH NEW INSULATED TERMINALS. (IF NEEDED)
- VII. INSTALL NEW SWITCH RING AROUND THE ROTATING COLUMN. LOCATE THIS RING IN THE SAME PLACE AS THE OLD RING. SEE DETAIL #3.

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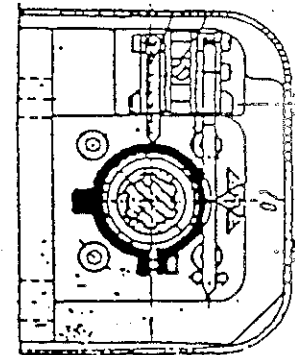


DETAIL #1
SWITCH REMOVAL



DETAIL # 3
NEW SWITCH RING

NEW SWITCH RING



DETAIL # 2
OLD SWITCH RING

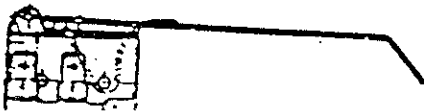
SAFETY SYSTEMS PROTECT EVERYONE: MAKE SURE THEY ARE WORKING:



SERVICE BULLETIN-004n

BODE CORPORATION
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Jackson Mill Road
Spartanburg, S.C. 29305
Tel: (803)578-8833
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Telecopier: (803)578-8802

VIII. INSTALL NEW SWITCHES AND REWIRE THESE AS TO LOCATION PER YOUR LABELS. TO DETERMINE NEW SWITCHES FROM OLD SEE DETAIL #4



DETAIL #4 NEW SWITCH



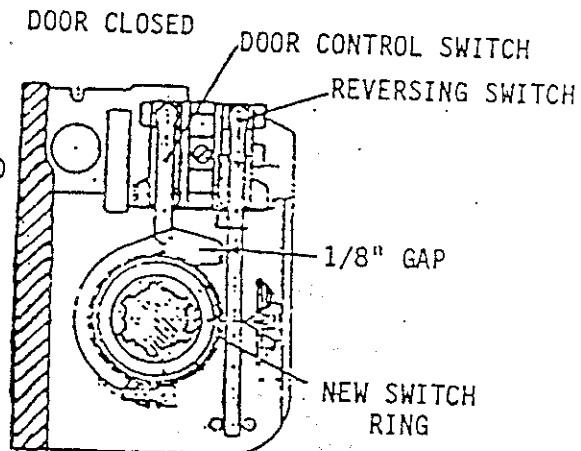
OLD SWITCH

IX. ADJUST THE NEW SWITCH RING AS IN DETAIL #5. SWITCH TANG ON LONG SWITCH SHOULD BE CENTERED IN THE SWITCH RING GROOVE AS NOT TO RUB ON THE TOP OR BOTTOM OF THE CHANNEL.

NEW SWITCH RING MUST BE ADJUSTED WITH DOOR SYSTEM DEPRESSURIZED AND DOOR MANUALLY PULLED CLOSED.

MAKE SURE THAT THE SWITCH RING DOESN'T RUB ON THE SPINDLE DRIVE HOUSING.

X. AFTER ADJUSTMENT REPRESSURIZE THE DOOR SYSTEM AND TEST THE FUNCTION OF THESE SWITCHES. NOTE: SINCE THE LONG TANG SWITCH CONTROLS THE REVERSING FEATURE OF THE DOOR SYSTEM IT IS IMPORTANT TO CHECK THE OPERATION EACH TIME THE DOOR SYSTEM IS WORKED ON.



DETAIL #5

SAFETY SYSTEMS PROTECT EVERYONE: MAKE SURE THEY ARE WORKING:

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- XI. REPLACE THE COVER AND COVER GASKET WITH THE NEW COVER THAT HAS MORE TOP ROOM TO ACCOMMODATE THE NEW SWITCH RING.
NOTE: DO NOT USE OLD COVER AS DAMAGE TO THE NEW STYLE SWITCH RING WILL OCCUR.

AS A CONVENIENCE IN ORDERING ALL PARTS NEEDED TO CONVERT TO THE NEW STYLE SWITCHING SYSTEM WE HAVE ASSIGNED ONE KIT NUMBER. THIS NUMBER WILL INCLUDE THE FOLLOWING PARTS: EXCHANGE KIT #2501.00

- 1- LEFT SIDE SWITCH ASSEMBLY- # 2.5730.71.1.01.306
- 1- RIGHT SIDE SWITCH ASSEMBLY-# 2.5730.71.2.01.306
- 2- STAINLESS STEEL SWITCH RING-#4.6814.36.000.451
- 2- MOTOR COVERS WITH GASKET 1- left #0043.08
1- right #0043.07

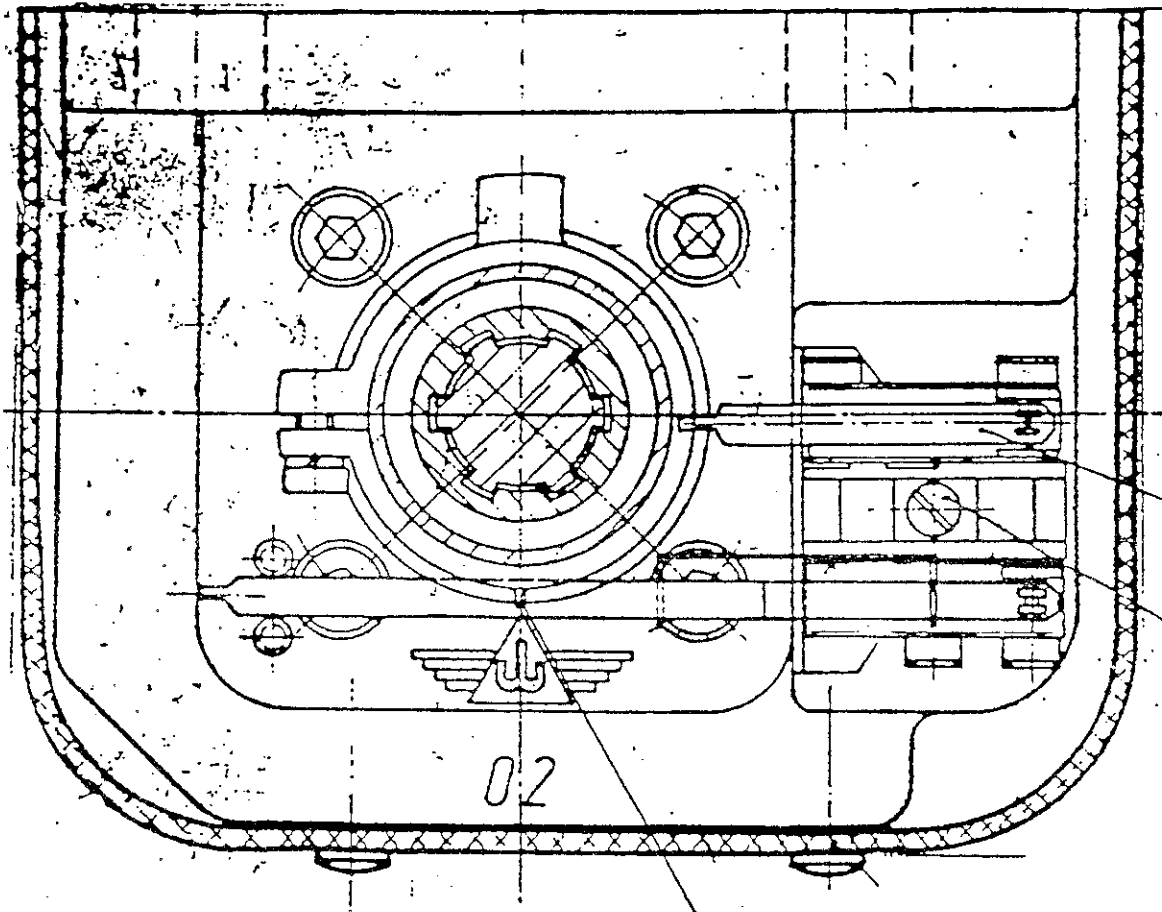
FOR MORE INFORMATION PLEASE CONTACT:

BODE CORPORATION
P.O. BOX 4399
SPARTANBURG, S.C.
29305

1-800-822-2633

803-578-9683

SAFETY SYSTEMS PROTECT EVERYONE: MAKE SURE THEY ARE WORKING:



02

OLD STYLE SWITCHES
AND SWITCH RINGS.

required adjustment
align with middle mark

QUALITY DOORS ARE OUR BUSINESS



SERVICE BULLETIN-005-n

1-1-1987

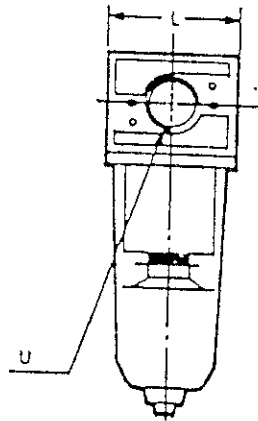
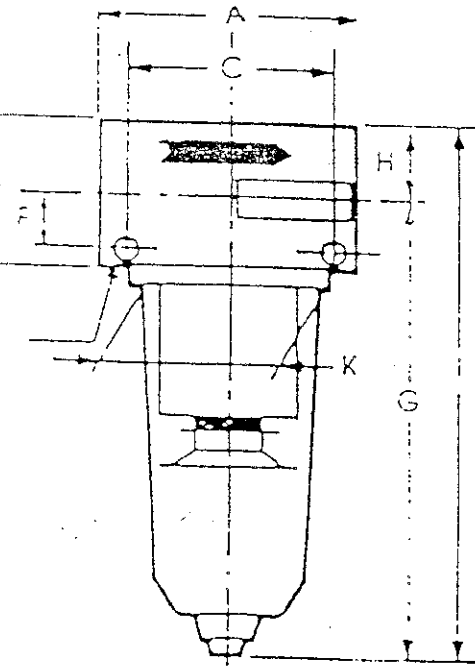
SUBJECT: RECOMMENDATION FOR INSTALLING AN INLINE AIR FILTER INTO THE MAIN AIR INPUT LINE.

AS OF 1-10-1987 BODE WILL FURNISH THIS FILTER AS STANDARD EQUIPMENT ON ALL COMPLETE DOOR SYSTEMS SHIPPED.

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INSTALLATION MUST BE MADE IN THE MAIN AIR INPUT LINE WITH THE PROVIDED FITTINGS.

PLEASE NOTE THE DIRECTION OF THE AIR FLOW INDICATED BY AN ARROW ON THE TOP OF FILTER HOUSING.



Bowl	Modu 6
FU	1/4"
A	1.65
C	1.20
D	1.73
F	.39
G	4.96
H	.79
I	5.74
J	1.8
K	1.57
L	1.65
M	.95
P	1/8"
Wt. lbs.	64

FILTER # 0048.02

THE FILTER UNIT PROVIDES A 50 MICRON ELEMENT, AUTOMATIC PULSE DRAIN (WHICH REQUIRES A DRAIN TUBE), AND A WATER SEPARATOR. UTILIZATION WILL ALLOW CLEAN, DRY AIR THAT WILL INCREASE SOLENOID VALVE LIFE.

SAFETY SYSTEMS PROTECT EVERYONE: MAKE SURE THEY ARE WORKING:

QUALITY DOORS ARE OUR BUSINESS



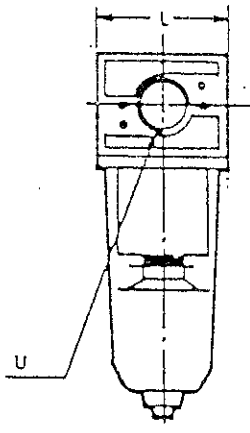
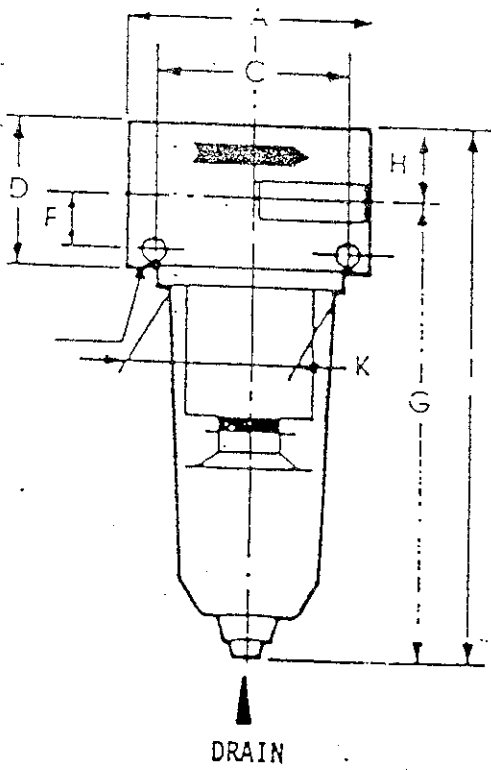
SERVICE BULLETIN-005a

12-17-91

Subject: INLINE AIR FILTER

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Care should be taken when tightening the Plastic Bowl on the Air Filter. The Plastic Bowl only need be hand tight to seal. Plastic Bowl should not be used as a leverage tool when airline fittings are screwed into the filter housing. Also care should be taken when tightening the drain line fitting on the bottom of the Plastic Bowl. Drain line is needed to discharge the moisture that builds up in the filters Plastic Bowl.



Bowl	Modu 6
U	1/4"
A	1.61
	1.25
D	1.73
	3.0
	4.96
	7.2
	5.74
	1.6
	1.57
	1.65
	.95
P	1/8"
YL	.64

SAFETY SYSTEMS PROTECT EVERYONE: MAKE SURE THEY ARE WORKING:



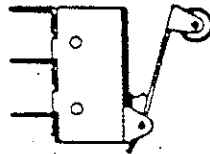
SERVICE BULLETIN-007n

11-7-89

CAM ACTIVATED SWITCH SYSTEM
SPINDLE DRIVE MOTOR

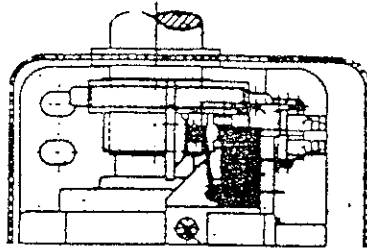
BODE CORPORATION
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Jackson Mill Road
Spartanburg, S.C. 29305
Tel.: (803)578-9683
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- I. DOOR REVERSING SWITCH
A. THE REVERSING OR SAFETY REOPEN CYCLE, OF THE SWITCHING SYSTEM IS ACHIEVED WITH A CAM ACTIVATED ROLLER SWITCH. SEE DETAIL #1.



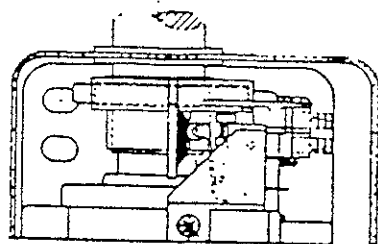
DETAIL #1

- B. THE ROLLER LIMIT SWITCH IS SHOWN MOUNTED VERTICALLY TO THE MOTOR HOUSING. SEE DETAIL #2.



DETAIL #2

- C. THE ROLLER LIMIT SWITCH IS ACTIVATED BY AN ADJUSTABLE PLASTIC CAM WHICH WILL SLIDE UP AND DOWN TO THE DESIRED POSITION AND IS SECURED BY TWO SCREWS. PROPER ADJUSTMENT WILL PROVIDE SWITCH ACTIVATION WHEN THE SPINDLE DRIVE RISES AND DOOR IS CLOSED. SEE DETAIL #3.



DETAIL #3

NOTE: THE REVERSING SWITCH ACTIVATION SHOULD BE ADJUSTED SO THAT THE SWITCH CLOSSES WHEN THE COLUMN HAS LIFTED BETWEEN 3.5mm (5/32") AND 6.5mm (1/4").



SERVICE BULLETIN-007n

11-7-89

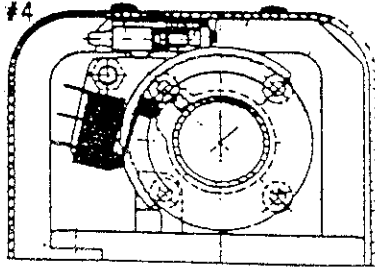
CAM ACTIVATED SWITCH SYSTEM
SPINDLE DRIVE MOTOR

BODE CORPORATION

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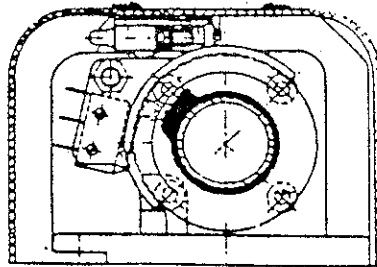
II. DOOR CONTROL AND ACCESSORY SWITCHES.

- A. THE DOOR CONTROL AND ACCESSORY FUNCTIONS ARE ALSO CONTROLLED BY ROLLER LIMIT SWITCHES. THE TWO SWITCHES ARE MOUNTED ATOP EACH OTHER IN A HORIZONTAL POSITION TO THE FLOATING PLASTIC SWITCH CARRIER.
SEE DETAIL #4.



DETAIL #4

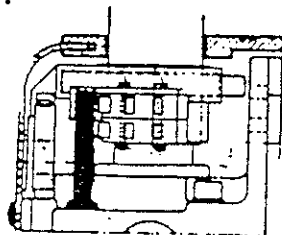
- B. THE TWO ROLLER LIMIT SWITCHES ARE ACTIVATED SIMULTANEOUSLY BY AN ADJUSTABLE CAM SWITCH RING AFIXED TO THE BOTTOM OF THE ROTATING COLUMN WHICH IS LOCKED IN PLACE BY A SET SCREW TO ALLOW FOR FINE TUNE ADJUSTMENT.
SEE DETAIL #5.



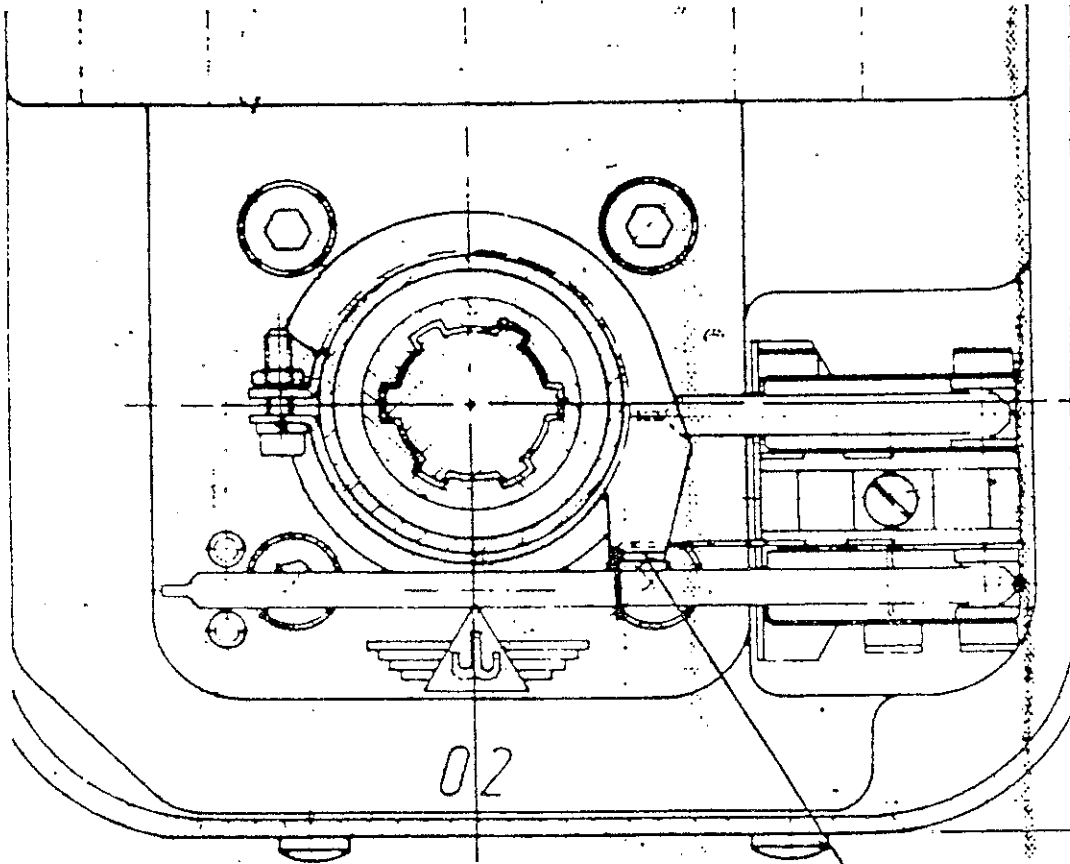
DETAIL #5

III. MAINTAINABILITY

- A. OVER TIME AND NUMEROUS OPERATIONS IT IS RECOMMENDED THAT THE GUIDE PIN FOR THE FLOATING SWITCH CARRIER BE CLEANED WITH NON-CONDUCTIVE CLEANING SPRAY (WD-40).
SEE DETAIL #6.



DETAIL #6



02

1/8" GAP

NEW STYLE SWITCHES
AND SWITCH RING

QUALITY DOORS ARE OUR BUSINESS



SERVICE BULLETIN-007n

11-7-89

CAM ACTIVATED SWITCH SYSTEM
SPINDLE DRIVE MOTOR

ALL WEARING COMPONENTS ARE REPLACEABLE ON A PART BY PART BASIS.

NOTE: IT IS RECOMMENDED THAT THE REVERSING SWITCH AND THE DOOR CONTROL SWITCH BE CONNECTED IN SERIES SO THE ADJUSTABLE CAM RING ACTIVATES THE DOOR CONTROL SWITCH THAT INTURN ACTIVATES THE REVERSING SWITCH.

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SAFETY SYSTEMS PROTECT EVERYONE: MAKE SURE THEY ARE WORKING:



• *SERVICE BULLETIN-008* PAGE 1
10-15-90
LUBRICATION OF ROTATING COLUMN ASSEMBLY

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Jackson Mill Road
Spartanburg, S.C. 29305
Tel.: (803)578-9683
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DURING INSTALLATION WE RECOMMEND THAT THE BEARING HOUSING AND SPRING BE COATED WITH A LONG LIFE CHASSIS LUBE OR LITHIUM #2 GREASE. (REFER TO PAGE 2 OF BULLETIN 008) DURING OPERATION IF BEARING HOUSING OR SPRING IS REMOVED IT SHOULD BE CLEANED AND LUBRICATED AGAIN BEFORE REPLACEMENT. IF THEY ARE NOT REMOVED THEN SHOULD BE LUBRICATED ON A YEARLY BASIS.

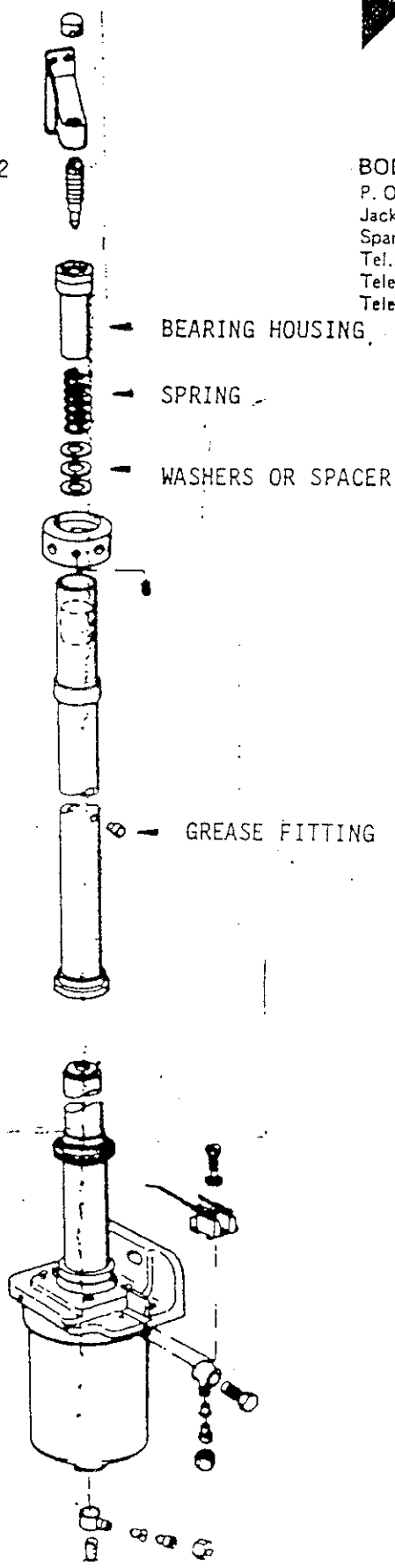
DURING OPERATION WE RECOMMEND THAT THE SPINDLE DRIVE BE LUBRICATED WITH THE LONG LIFE CHASSIS LUBE OR LITHIUM #2 GREASE USING THE GREASE FITTING INSTALLED ON THE SIDE OF THE COLUMN. (REFER TO PAGE 2 OF BULLETIN 008) WITH A STANDARD HAND PUMP GREASE GUN 3 TO 4 PUMPS EVERY 6 MONTHS FOR NORMAL OPERATION AND 3 PUMPS EVERY 3 MONTHS HEAVY OPERATION.

NOTE: OPERATION IN LOW TEMPERATURE WITH CLIMATE BELOW 0°F A LOW TEMPERATURE GREASE IS RECOMMENDED TO REPLACE THE STANDARD GREASE.



SERVICE BULLETIN-008 PAGE 2
10-15-90

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SERVICE BULLETIN-009n

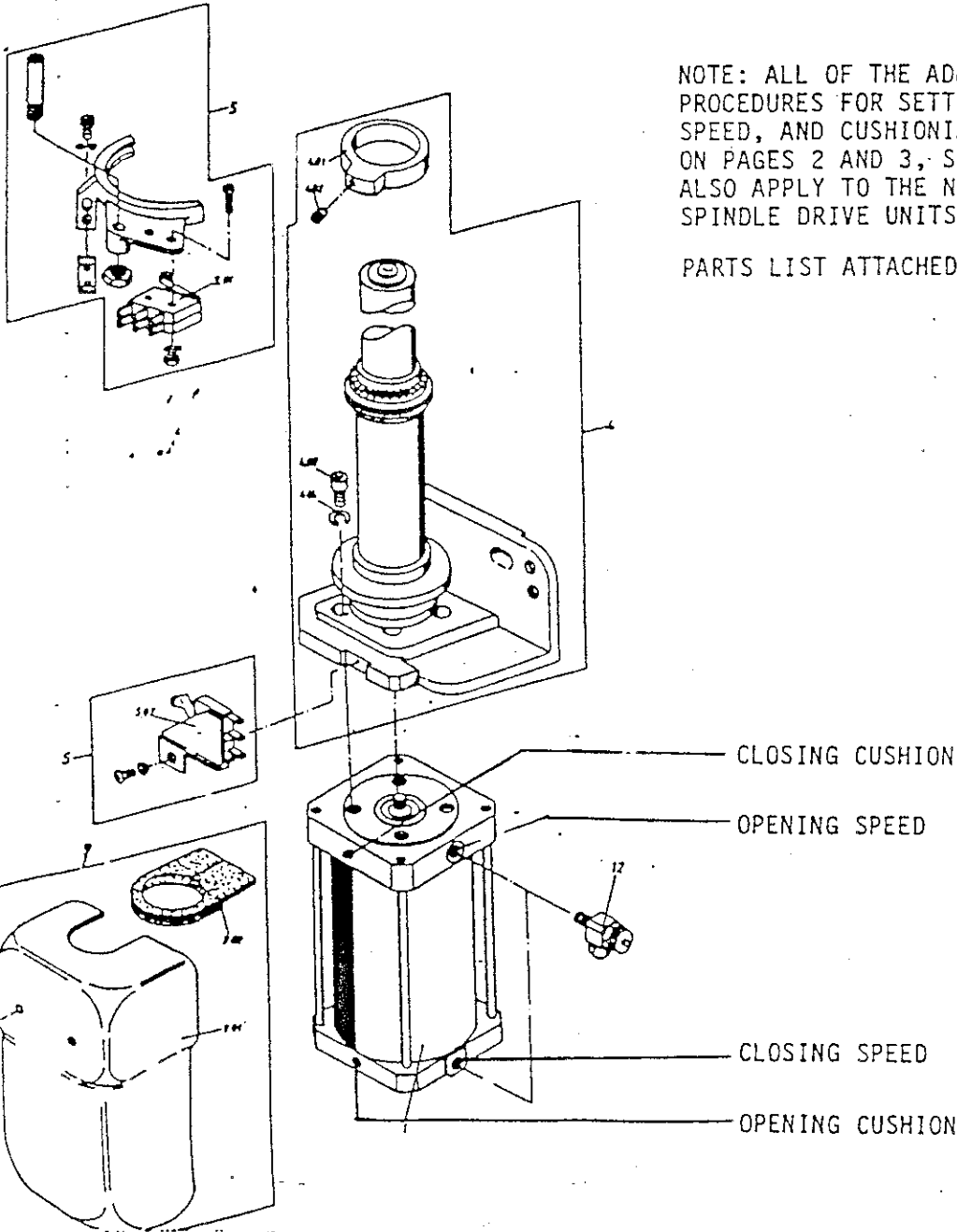
10-7-1991

NEW STYLE SPINDLE DRIVE UNITS
WITH CAM ACTIVATED SWITCH SYSTEM

BODE CORPORATION
P. O. Box 4399
Jackson Mill Road
Spartanburg, S.C. 29305
Tel.: (803)578-9683
Telex: 805173
Telecopier: (803)578-8802

NOTE: ALL OF THE ADJUSTMENT
PROCEDURES FOR SETTING RESERVE,
SPEED, AND CUSHIONING EXPLAINED
ON PAGES 2 AND 3, SECTIONS 6,7,8,
ALSO APPLY TO THE NEW STYLE
SPINDLE DRIVE UNITS.

PARTS LIST ATTACHED



DATE: 12-Sep-91

BODE CORPORATION
SPARTANBURG, S.C. 29305

FILE: 0076.17.D

SPARE PARTS LIST
SPINDLE DRIVE W/SPANISH CYLINDER.RH

POS. NO.	BODE PART NUMBER	OLD BODE PART #	DESCRIPTION
1	0276.16.C	6405.13.1.01.435	DOOR CYLINDER,RH
2			
3			
4	0076.16.C	8900.20.1.01.465	SPINDLE DRIVE COMPLETE,RH
4.01	0102.04.A	8352.66.0.01.451	SWITCH RING
4.02	0097.87.W	DIN 916 M6 x 10	SET SCREW, BLACK
4.03	0001.42.N	DIN 912 M8 x 30	SCREW
4.04	0003.34.W	DIN 7980 8	WASHER
5	0060.17.W	8900.30.1.03.450	SWITCH ASS'Y,RH
5.01	0060.04.W	7729.38.0.01.450	SWITCH
5.02	0057.34.W	8352.62.1.01.450	REVERSING SWITCH W/HOLDER,RH
9			
9.01	0043.20.C	8900.10.1.01.325	MOTOR COVER,RH
9.02	0065.02.B	6900.42.0.02.324	RUBBER SEAL
9.03	0002.14.W	ULS 5.8 M6 x 16	SCREW
12	0056.04.N	893-900-7650	SWIVEL FITTING
	0068.08.N	6900.98.0.15.465	REPAIR KIT,SPINDLE DRIVE
	0068.07.N	6405.91.0.04.465	REPAIR KIT,CYLINDER

DATE: 12-Sep-91

BODE CORPORATION
SPARTANBURG, S.C. 29305

FILE: 0076.18.D

SPARE PARTS LIST
SPINDLE DRIVE W/SPANISH CYLINDER.LH

POS. NO.	BODE PART NUMBER	OLD BODE PART #	DESCRIPTION
1	0276.17.C	6405.13.2.01.435	DOOR CYLINDER,LH
2			
3			
4	0076.19.C	8900.20.2.01.465	SPINDLE DRIVE COMPLETE,LH
4.01	0102.04.A	8352.66.0.01.451	SWITCH RING
4.02	0097.87.W	DIN 916 M6 x 10	SET SCREW, BLACK
4.03	0001.42.N	DIN 912 M8 x 30	SCREW
4.04	0003.34.W	DIN 7980 8	WASHER
5	0060.16.N	8900.30.2.03.450	SWITCH ASS'Y,LH
5.01	0060.04.B	7729.38.0.01.450	SWITCH
5.02	0057.35.N	8352.62.2.01.450	REVERSING SWITCH W/HOLDER,LH
9			
9.01	0043.21.C	8900.10.2.01.325	MOTOR COVER,LH
9.02	0065.02.B	6900.42.0.02.324	RUBBER SEAL
9.03	0002.14.N	ULS 5.8 M6 x 16	SCREW
12	0056.04.N	893-900-7650	SWIVEL FITTING
	0068.08.N	6900.98.0.15.465	REPAIR KIT,SPINDLE DRIVE
	0068.07.N	6405.91.0.04.465	REPAIR KIT,CYLINDER

QUALITY DOORS ARE OUR BUSINESS.



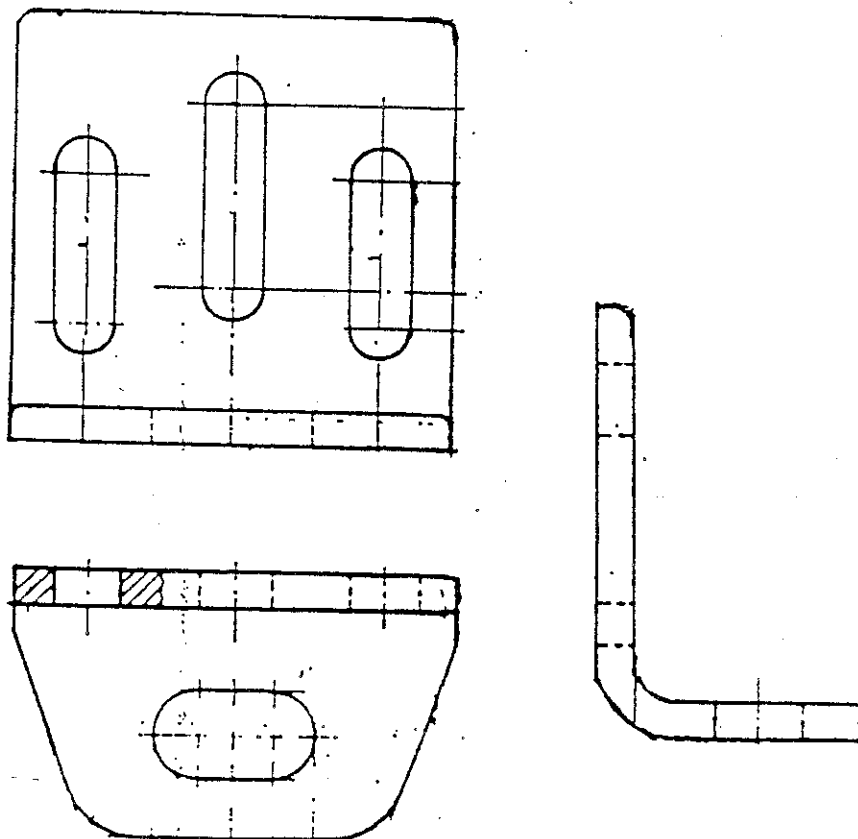
•SERVICE BULLETIN-010

10-8-1991

SLOTTED DOOR ARM BRACKET

BODE CORPORATION
P. O. Box 4389
Jackson Mill Road
Spartanburg, S.C. 29305
Tel.: (803)578-9683
Telex: 805173
Telecopier: (803)578-8802

ON CURRENT DESIGNS A SLOTTED DOOR ARM BRACKET HAS BEEN ADDED TO AID IN THE HEIGHT ADJUSTMENT. ONCE THE LOWER DOOR ARM HAS BEEN TAC WELDED INTO PLACE AND IT BECOMES NECESSARY TO DO ADDITIONAL ADJUSTMENTS TO THE HEIGHT OF THE DOOR PANEL: THE (3) SCREWS THAT SECURE THE LOWER DOOR ARM BRACKET TO THE DOOR PANEL CAN BE LOOSENED AND THEN HEIGHT CAN BE ADJUSTED BY RAISING OR LOWERING THE UPPER DOOR ARM ON THE ROTATING COLUMN TO DESIRED POSITION. AFTER PROPER HEIGHT OF THE DOOR PANEL IS SET BE SURE TO SECURE UPPER DOOR ARM TO THE COLUMN AND RETIGHTEN SCREWS FOR THE LOWER DOOR ARM BRACKET. BRACKET SHOWN BELOW.





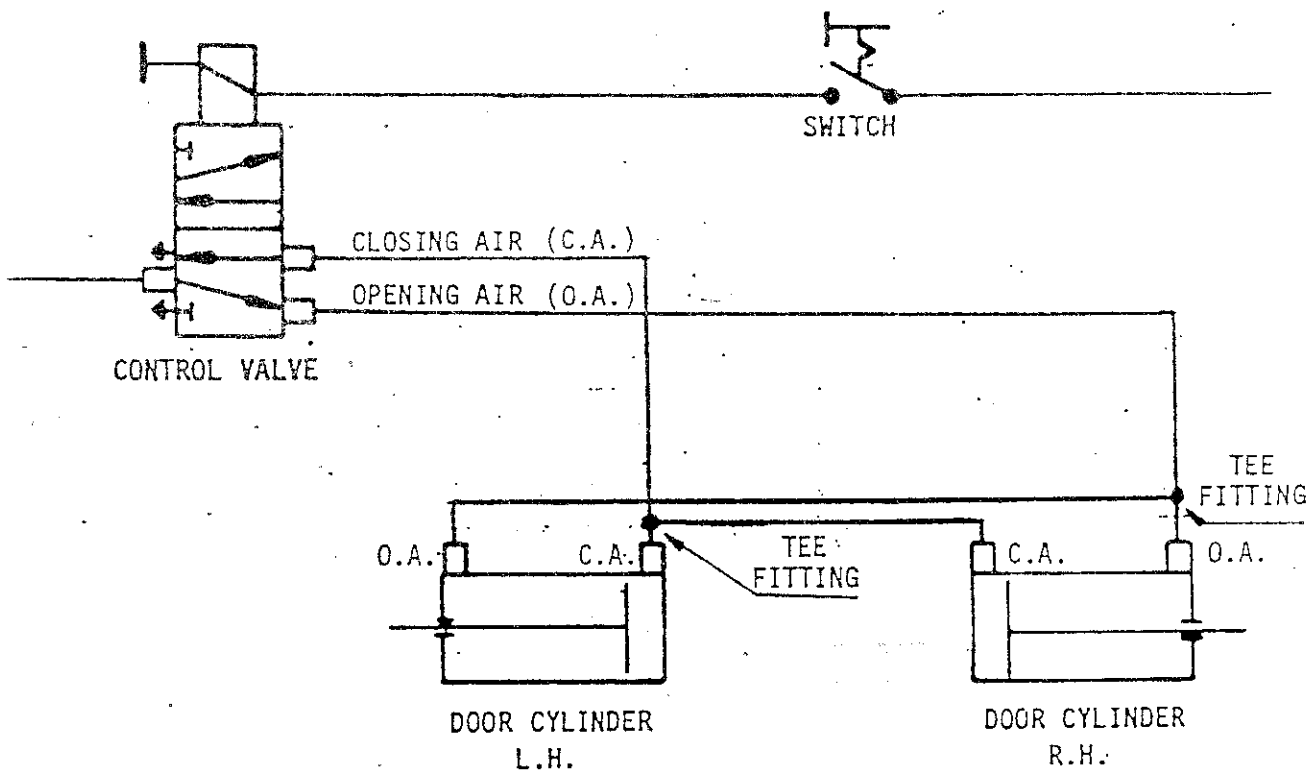
SERVICE BULLETIN-011

1-24-92

AIR LINE ROUTING AND TEE FITTING LOCATIONS FOR THE DOUBLE PANEL PLUG DOORS SEQUENCING PROBLEMS.

BODE CORPORATION
P. O. Box 4399
Jackson Mill Road
Spartanburg, S.C. 29305
Tel.: (803)578-9683
Telex: 805173
Telecopier: (803)578-8602

DURING ROUTING OF THE AIR LINES, MAKE SURE THAT THE TEE FITTINGS SHOWN BELOW ARE AS CLOSE TO THE DOOR CYLINDERS AS POSSIBLE (WITHIN 6 INCHES). ROUTING OF THE AIR LINES IN THIS MANNER WILL AID IN THE SPEED ADJUSTMENTS OF BOTH DOOR CYLINDERS FOR PROPER DOOR PANEL SEQUENCING.



NOTE: DOOR CYLINDERS SHOWN IN THE OPEN POSITION AND CONTROL VALVE ACTIVATED.

SAFETY SYSTEMS PROTECT EVERYONE: MAKE SURE THEY ARE WORKING: